

Amateur Radio

Volume 80
Number 6
June 2012
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John Moyle Field Day Results + JMFD high in the Alps

An isolated USB interface
Promoting amateur radio
Computer powered Tx/Rx

ISSN 0007-6859



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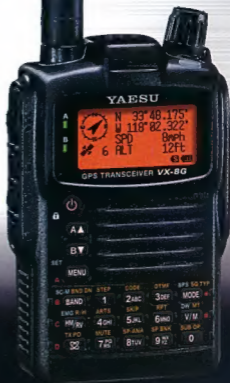


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VX-8GR/E



Amateur Radio

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Volume 80
Number 6
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This month's cover

The VK3JMH solar powered John Moyle Field Day
(JMFD) station at 1700m ASL in the Victorian Alps.
The Results of the 2012 JMFD are published in this
issues, as is a story from Stephen VK3SN of his
expeditions over the last two years into the Victorian
Alps for the event. See page 10. Photo by Stephen
Warrilow VK3SN/VK3JMH.

Contributions to Amateur Radio



Amateur Radio is a forum for
WA members' amateur radio
experiments, experiences,
opinions and news. Manuscripts
with drawings and/or photos are
welcome and will be considered
for publication. Articles attached to
email are especially welcome. The

WA cannot be responsible for loss or damage to any material.
Information on house style is available from the Editor.

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Back Issues

Back issues are available directly from the WA National Office
(until stocks are exhausted), at \$6.00 each (including postage
within Australia) to members.

Photostat copies

If back issues are unavailable, photocopies of articles are
available to members at \$2.50 each (plus an additional \$2 for
each additional issue in which the article appears).

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reflect the official view of the WIA and the WIA cannot be held
responsible for incorrect information published.

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A radio communication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

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Representing

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Member of the International Amateur Radio Union

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Editorial

Peter Freeman VK3PF

AR in electronic format

The Publications Committee has received very little feedback regarding the demand for an annual collation CD or DVD of a year's issues of *Amateur Radio*. Does this mean that there is little demand? We can only therefore assume that demand is low for such a product.

The committee has decided to include electronic copies of *AR* on the CD version of the *Callbook*, with an entire year's issues included. This means that a bonus on the 2013 *Callbook* will be all issues of *AR* from 2011. We recognise that this is a delay of approximately one year, but it gives us a way of adding value to the *Callbook*, whilst also making *AR* available in electronic format.

We trust that this move will be welcomed by members and readers.

As this Editorial is being prepared, I have just received my copy of the June issue of the ARRL's *QST* magazine, which is promoting that the Digital Edition of *QST* will be available for ARRL members from late May (for the June issue). In the coverage of the steps undertaken in the lead up to this milestone, a large number of issues are noted. Many of these issues have also been raised at Publications Committee meetings when we have discussed this topic. The committee is still considering the question of publishing *AR* electronically at about the same time as the paper-based issue is published. However, we still have many questions to answer and possible methods of publication

need further exploration before we make any final decision.

WIA Annual Conference

The WIA Annual Conference is almost upon us. This issue of *AR* is due in post boxes in the days immediately prior to the event. It is now too late to register to join the event. I am sure that we will have news from the event in our July issue. I am certainly looking forward to all the activities on offer, except for chasing the *Horus* balloon. Why – the balloon chase conflicts with the paddleboat cruise and I chose the latter option. I hope that someone will have equipment on the *Mundoo* to monitor the progress of the flight and the chasers.

Microwave activity

The VHF/UHF – An Expanding *World* column reports on some of the recent activity on the microwave bands in Victoria and Tasmania. I had the pleasure of setting up a portable 10 GHz station on two separate days and successfully worked Rex VK7MO from two new gridsquares. Other commitments meant that I missed out on one of the squares activated, but such is life. Rex can be very proud of his efforts over recent months. He has extended distances worked by aircraft enhancement/scatter, given several operators new squares and continues to write analytical reports of the activities which are available for all interested to read via the web. I look forward to hearing more about his activities at GippsTech in July.

Continued on page 4



WIA comment

Michael Owen VK3KI

Thoughts from an Audit

I am sorry Mr Editor, I know I am sending you this "Comment" for the June issue of the magazine a bit late.

My excuse is that the ACMA has been conducting a formal audit of the WIA in relation to our management of the examinations, issuing Certificates of Proficiency and making callsign recommendations on its behalf.

Two very nice people have been in the WIA office for four full days, seeing what we do and talking to our staff and to various volunteers.

How well do we keep to our various obligations under the Deed between the WIA and ACMA? Do we do what we have to do within the time that we are meant to? What about what we charge? Is there full cost recovery? Do we calculate the fees that we charge (and must charge) correctly? Do we keep financial records properly?

Make no bones about it; we welcome the opportunity for someone from outside looking at what we do, because they may see better ways to do some things.

I asked for a meeting before the audit started, when we could talk with them and our colleagues from the ACMA responsible for managing the WIA Deed, about two things that I thought would probably be something different from the subject of the usual audit. One was amateur radio. The other was a voluntary organisation undertaking responsibility for work for a Commonwealth agency.

We had the meeting and we talked about those matters.

At the end of their visit to Melbourne, we had another talk about the voluntary work of many contributors.

The voluntary factor had emerged in a number of contexts.

Fred Swainston, our Registered Training Organisation (RTO), had taken the auditors through the way we train, qualify, accredit and register our Assessors. He showed how they are audited annually, and re-registered every three years. He showed how, using the Assessor Information Site, a site he established and maintains, the work of our Assessors is tracked.

Fred stressed that our Assessors were unpaid, and the only costs incurred were the very occasional reimbursement of exceptional charges for very long travel or the cost of long phone calls for a remote assessment.

But Fred stressed one thing; the commitment and enthusiasm of our volunteer Assessors.

Of course, what the audit is all about is the obligations accepted by the WIA under the Deed.

But, it was pointed out today, we do more things than we are obliged to under the Deed.

The Assessors will collect Callsign Recommendation forms from candidates, help them to fill in the application for an apparatus licence, collect the fees for the licence, and send it all with the Assessment results to the WIA, where the office checks it all, issues the certificate of proficiency, adds the certificate details to the application for an apparatus licence, sends the certificate of proficiency to the candidate and the application for an apparatus licence, the callsign recommendation and the licence fee to the ACMA in Canberra.

All of that we do because we are the WIA and not because of the Deed.

We believe that it is most important for people who have qualified for an amateur licence to get their callsign and be able to operate as soon as possible, and this certainly does speed up the process.

There is another consequential benefit from this. It means that the ACMA receives the majority of new applications for an amateur licence pre-checked, in bundles and with one cheque covering the licence fees of a number of applications. Surely this must help the ACMA?

All of that is outside the Deed, but because our role is to encourage amateur radio, this is a service we can offer.

How we handle the licence fee money is our responsibility, but in fact, what we do is follow the advice we were given by the WIA's auditors.

Robert Broomhead took the auditors through the creation of an exam pack, and all the information that has been recorded in respect of every pack since the very first pack went out in October 2005.

John Longayroux led the auditors around the systems the WIA has in place to track expenses and income, and provide the information required to satisfy the annual cost recovery information we must provide to the ACMA.

Of course, some of the audit was pretty detailed. Under the Deed we are obliged to provide the ACMA with quite a lot of information within 30 days of the 30th June each year - "Please, can you show us an email providing that information to the ACMA with a date on it to show when it was sent?"

Continued on page 5

ACMA undertakes major regulatory action in Adelaide

The ACMA has confirmed that a major compliance action was undertaken in Adelaide recently. Reports in the *Adelaide Advertiser* suggesting that "ham operators" were involved have been rejected by the ACMA.

Monitoring of the radio spectrum from ACMA infrastructure in Adelaide confirmed that a number of users (Pirates) were active on frequencies licensed to other parties. Intelligence gathered through this monitoring indicated that these individuals possessed equipment programmed with numerous frequencies.

Enquiries made by the ACMA found that these users did not hold ACMA licences for these frequencies.

The radios operated by the individuals involved in this matter had been programmed with a number of frequencies which were licensed to various organisations. The ACMA received a report of substantial interference from a licensee although the extent of the disruption to their communications is not known.

The ACMA did not receive any information indicating that there was a danger to public safety. Notices issued were in relation to the radio transceivers in the possession of the individuals and nine of these transceivers were subsequently surrendered to the ACMA. The ACMA is still considering whether to take prosecution action.

Amateur issues at WRC-12 - Debriefing Session

On Monday 23 April 2012 the ACMA conducted a debriefing session in relation to WRC-12 at the National Library of Australia in Canberra, attended by around 60 people.

Dale Hughes VK1DSH was the member of the Australian delegation nominated and supported by the Wireless Institute of Australia and who was responsible for Agenda Item 1.23, the proposal to "consider an allocation of about 15 kHz in parts of the band 415-526.5 kHz to the amateur service on a secondary basis, taking into account the need to protect existing services."

Dale reported in detail on the outcome of this proposal in the April issue of the WIA's *Amateur Radio* magazine.

Dale's presentation to the debriefing session is an interesting description of the processes of the ITU at a World Radiocommunication Conference, and can be downloaded from the WIA website.

Work has already started for the next WRC, WRC-15.

WIA Awards program changes

Shortly after becoming the WIA Director for Awards, Chris Platt VK5CP found that he had very little time for the task because of increasingly intense work pressures. WIA Director Trent Sampson VK4TS has been appointed Acting Director

for Awards until Chris is able to devote the necessary time to the role.

Steve Chamberlain VK6IR was appointed Awards Manager last February but found that he was unable to use the time he had set aside for establishing the role and so felt it better to allow someone else the opportunity to deal with this important area of WIA interest.

Bob Robinson VK3SX has been appointed Awards Manager.

In addition, Allan Meredith VK2CA has re-joined the Awards Committee and Laurie Davison VK7ZE has joined the Committee. Laurie is expected to become the first Australian ARRL card checker in the very near future.

Last March Dale McCarthy VK4DMC retired from the Awards Committee as he felt that he was no longer able to devote the necessary time to that role.

The routine management of the Awards process will continue to be through the WIA office, and WIA Treasurer John Longayroux VK3PZ has reorganised much of the basic current data to provide a basis for the work being undertaken by Trent, Bob and the Awards team.

The Awards pages on the WIA website have been updated, work is continuing to update the DXCC standings and the delay in issuing WIA Award certificates is expected to be largely overcome in the next six weeks.



Editorial

Continued from page 2

There has also been further microwave activity in south eastern Queensland.

It is excellent to see groups forming in different areas and that the established operators are sharing information with all interested amateurs. Such

information sharing and encouragement is surely amongst the most worthwhile aspects of our hobby.

Our local club is currently gearing up for the annual GippsTech event, which is all about sharing information and inspiration. That

means that I have several tasks to complete soon, so it is probably time to get to those tasks.

Until next month,

Cheers,

Peter VK3PF



Our auditors confessed that they had not previously conducted an audit for the Commonwealth involving a voluntary organisation.

But it was their audit procedures that made me appreciate how, on so many levels, the WIA and its volunteers were contributing to the growth and health of amateur radio. I had not really thought about the controls and

protections built into our software, created by volunteers, the controls and protections in the Assessor Information System software created for our RTO.

I had not really thought about what the WIA and its people do that is more than we/they are obliged to do under the Deed, because we believe it is good for amateur radio, and that is why we exist.

I had not really thought about how much all this would cost if the WIA was an ordinary commercial entity, without volunteers.

The ACMA's auditors have made me think about these things.

So, Mr. Editor, I hope you can forgive me for being late.



Over to you - Three pin plugs

Steve Mahony VK5AIM

In the late 1940s to the 1950s, Australia changed over to the 240 volt three pin mains plug for all electrical appliances. Prior to this time we only had two pin 240 volt (210 volt in some states) power outlet sockets. Back then they consisted of separate switch and sockets all mounted on a wooden block, not like the 'combinations' of today.

This change to a three pin plug/socket was to allow all appliances to be earthed via another wire from the body or case of the appliance to the third pin and then to an earth connection via the water pipes of the building. This also required the cable flex to have three wires/ conductors, red as active, black as neutral and green as earth. This system was to allow any fault current to pass safely to earth instead of passing through the appliance user. It had been like this for the past sixty years. The only change has been the colour of the conductors to brown, blue, and yellow and green striped for the earth conductor. With the advent of the double earthed appliances the earth pin on the plug has disappeared.

I have an historical question about the three pin plug?



Photo 1: The three pin plug in question!

Recently I obtained an old audio amplifier, which I believe was a school PA unit, all valve, 6V6s, 6SJ7s and a 5Y3 and so on, branded S>S>S, Steins Sound Systems. According to the number on the transformers it was made in 1950.

On the end of the mains cable, a rubber insulated cotton covered cable, well past its use by date, was one of the early three pin plugs. On cutting this flex off the amplifier I noticed the three pin plug was different from the current plugs. This plug, made from dark Bakelite labelled No 421 and made by Clipsal of South Australia had slightly different blades or pins.

Along the edge of each blade there are half round notches. I cannot understand what these notches are for; we see notches or grooves in the standard phone plug to engage in the spring contact of the socket. This also assists to hold the plug in place. These notches in the flat blade cannot engage in any connections in the socket as the contacts only make contact on the sides of these flat blades as this blade pushes between the two flat springy brass/copper leaves of the socket.

In my fifty plus years in electrical and electronics work, I have never seen any 240 volt sockets with connections made with springy contacts to the edge of the male pins to engage in these notches. It is a long time ago when, as an apprentice, I wired up all those new three pin power sockets and crawled around ceilings connecting up and soldering up bare copper earth wires.

Has the reader any information on the reason for these notches?

Contact Steve VK5AIM, QTHR or phone 08 8255 7397.



Foundation Corner 20 - A buzzer with a difference

Ross Pittard VK3CE

These days popular digital multi-meters come with a buzzer function which is very handy to check for shorts and continuity when setting up antennas and feed lines. The problem with these buzzers is they usually 'buzz' with anything from a dead short through to 100 ohms and sometimes higher resistance. This means when using them you need to constantly look at the display to make sure it is in fact reading zero ohms. The small circuit about to be described overcomes the main limitation of the multi-meter buzzer.

With this we do not have to constantly look at the meter to check that we do not have a varying resistance. The circuit uses three capacitors, two resistors and an old speaker from a discarded radio. The supply voltage can be anything from six to 18 volts without difficulty. A word of caution though, this is *not suitable* for checking for shorts on any electronic circuitry as the battery voltage used may damage sensitive components. It is primarily designed for checking cables, baluns and connectors.

Based on the ubiquitous NE555 timer IC it provides an audible signal

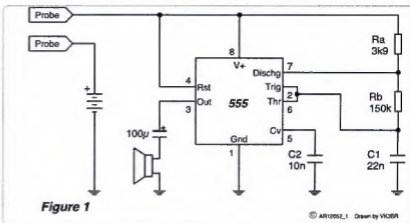


Figure 1: The 'buzzer with a difference' circuit.

that varies in frequency with different resistances between the probes. The 555 is running in what is called 'astable multivibrator' mode and the frequency of operation can be found by the formula:

$$\text{Frequency} = 1.443 / (R_a + 2R_b)C_1$$

Astable just means the oscillator runs continuously. There is a wealth of information on the net regarding literally hundreds of circuits based on the 555 IC from the ever reliable egg timer through to burglar alarms and even voltage regulators.

As can be seen from the circuit there is not much to build.

I used a small piece of 'vero' type board available from Jaycar and assembled the components 'breadboard' style, basically laying them out as on the circuit. If you haven't used vero board before have a look at the photos and see where I have cut the tracks to position the IC, and then all I have done is use the appropriate tracks to connect the rest of the circuit together.

Try laying out the components before soldering anything and try and get the best layout without too many crossovers.

Photo 1: The underside of the veroboard before cutting.

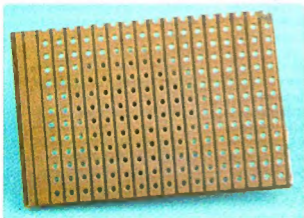
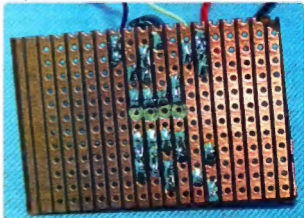


Photo 2: The veroboard after cutting and soldering the components.



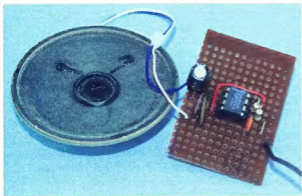


Photo 3: The completed board.

When finished a dead short between the probes will give a tone of around 150 Hz and this will increase up to around five kHz for a 150 ohm resistance between the probes. Of course if you have an intermittent connection the unit will vary in frequency indicating you have a fault. To change the range of frequencies the unit operates over simply change the value of the 22 nF capacitor in the circuit. I powered mine from a nine volt battery, from which no current is drawn unless something is placed across the probes. When completed, the unit can be put in a small plastic box with some holes cut out for the speaker.

I find mine very handy particularly outdoors on a bright day when it is sometimes hard to read a digital meter in direct sunlight. All I have to do is clip the leads onto a connector and give the cable a good wriggle and if the tone varies I know there is a problem.

Get on the Air with HF Digital

It is a step-by-step guide that'll get you started in the fascinating world of HF digital technology.

Written in an easy to understand, conversational style, this book will show you how to set up and operate your own HF digital station.

The text includes instructions for configuring software programs for popular modes such as RTTY, PSK31 and JT65.

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DXpeditioner extraordinaire Rex VK7MO has been at it again! This time on King Island and working amateurs from VK5 and all across VK3 on 10 and 24 GHz. Congratulations to all involved with a special mention of Eric VK7NFI who flew Rex and all the equipment across to King Island. I was told there was so little room in the plane Rex had trouble getting into his seat...HIHI.

Photo 1: The author VK7TW interviewing Rex VK7MO about the King Island DXpedition at a recent DATV night. Photo by VK7FEET.



VK7 Regional News Broadcast

Our merry band of news readers and re-broadcasters has grown substantially over the last month with two new readers making their debut - Rick VK7FRIK and Lyn VK7FLYN. We now have a reading team of six which is providing some great aural variety to our half hour of Regional News each week. We also have some new HF re-broadcasters in Peter VK7TPE, Garry VK7JGD, Alan VK7ZAR and Peter VK7PL. A big thank you is forwarded to all who have volunteered to get the news about this great hobby out to VK7 amateurs and abroad.

Cradle Coast Amateur Radio Club

The March meeting of CCARC took the form of a 'Do your own thing' day at the Gawler Hall in north-west VK7.

The weather was unkind, however a big thank you to Rick VK7FRIK who donated a couple of marquees for the event. Despite the weather there were many members, family and friends who attended. The innovative use of a Steve VK7NZL's 9 metre high plaster board lifter saw the HF antenna raised and many contacts were made on HF throughout the day.

By the time this goes to print CCARC are hoping to have the new battery box, batteries and wiring delivered to the top of Mt Duncan by helicopter to upgrade the VK7RMD (146.625 MHz) repeater. It will certainly be all hands on deck for this exercise! Dave VK7DC and Neil VK7ZNX have also been improving the Table Cape repeater by raising the antenna to the top of the tower and providing improved coverage into Ulverstone and the NW.

Northern Tasmania Amateur Radio Club

Congratulations to Joe VK7JG and Mike VK6WS for completing the first two metre VK6-VK7 EME contact on 4 April, 2012, using the weak signal application WSJT. This contact has been a long time in coming and much work has been put in to finally achieving this. Congratulations.

On 11 April, 2012 NTARC held a Special General Meeting to consider two additions to the NTARC rules. These additions related to automatically

lapsing a person's membership from 30 June if fees still unpaid and the second addition related to readmitting an expelled member using the same process as used for the expulsion.

Radio and Electronics Association of Southern Tasmania

Congratulations to Brian Elliston, Adam VK7FAZZ and Warren VK7FWAZ who all passed their Foundation Licence training and assessments. Congratulations also go to Peter Demoudy who passed his Standard examination on this assessment day.

Richard VK7RO presented a fascinating look at the 100 year history of the Marine Wireless Station on the Queen's Domain, Hobart on April 4. Richard took the attendees from establishment of the station by the Commonwealth Government in 1912 as one of a chain of coastal wireless stations to communicate with shipping, through



Photo 2: The Macquarie Island Expeditioners 1911-1913, who would have communicated with the Queen's Domain Wireless Station. Photo courtesy of VK7FEET.



Photo 3: REAST display at the National Field Day 2012, on location at Jaycar, Derwent Park. Photo courtesy of VK7VKT.

to its closure in 1992 and later reuse as Coast Radio Hobart. The early history included communication with the 1911-1913 Mawson Expedition to Antarctica via the wireless station on Macquarie Island. Thanks to Richard for this excellent presentation.

The WIA National Field Day on 14 April, 2012 saw REAST set up at Jaycar in the Hobart suburb of Derwent Park. Many interested onlookers were treated to a display and demonstration of amateur radio in its many forms and took away information about this great hobby.

Silent Key

Steve Jones VK7ZSJ

It is with deep regret we announce the sudden passing of Steve Jones VK7ZSJ, on Saturday, 28 April, 2012.

Despite Steve's battle with cancer for the last two years he had always maintained a positive outlook and had committed himself to enjoying all aspects of amateur radio. He regularly attended meetings in the north-west, was active with many facets of amateur radio and regularly chatting on the local repeaters.

He will be sorely missed by all amateurs on the north-west coast, and we would like to express our deepest sympathies to all his family.

Rest in peace Steve.

Contributed by Tony Bedelph VK7AX and David Cleland VK7DC on behalf of all amateurs on the north-west coast of VK7.



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Experiencing the JMFD

Stephen Warrillow VK3SN



Photo 1: VK3JNH portable field day station - perched on an alpine summit high above the clouds.

There are few activities more quintessential to amateur radio than John Moyle Field Day. The opportunity to get away from the day-to-day routine and indulge completely in meeting the challenges of portable operation is surely too good to pass up. Australia is arguably one of the best places in the world for such endeavours, with almost limitless opportunities to head out into the beyond. Many amateurs will have fond memories of past field day adventures, either as single operators or with their club. For events such as the JMFD to work, it is imperative that sufficient numbers of amateurs make the effort to actually go out and operate

in the field. I have thoroughly enjoyed heading out with the North-East Radio Group on the JMFD for several years now and learned much from the club's many experienced operators during these occasions. However, the opportunity to set out independently offered the chance to expand the number of stations on air and contribute more fully to the success of the event.

Planning

Setting out for field day is essentially no different to any other expedition, albeit on a more modest scale. One of the key elements to success is planning. This is crucial for a range of reasons, including

the sheer number of different bits of kit that must be assembled and also the fact that once one is away from civilisation, there is limited capacity to address problems that might arise through broken gear or forgotten items. I have long ago developed the habit of using checklists and worked hard at contingency planning. This approach definitely serves well when it comes to organising for field day. Another important factor is teamwork, and I am lucky to have a brother (VK3GT), who is similarly keen to participate in these events and has been available to pitch in. Between us, we have developed a comprehensive list of gear that we have refined over several years

such that it now covers most foreseeable situations. Using the list has ensured that (so far) there has not been one of those 'heart-sink' moments where it is discovered that a small, yet vital piece of gear has been left behind.

Location

Our chosen field day location is in the Victorian Alps, about five hours drive north-east of Melbourne. We know this region well from summer walks and winter cross-country ski trips. The summit we selected is deliberately at about the limit of what we can reach by 4WD. The reasoning behind this is that we want a very high and isolated position with 360-degree views that while accessible to us, is unlikely to be of much interest to the general public. This avoids the risk of curious onlookers wandering into guy-lines and coax runs. After much poring over topographic maps, it was fun doing a few reconnaissance trips prior to the event (under the guise of family bush walks!) to choose the best location. At over 1700 m ASL and with spectacular views across the high country, it must be one of the most picturesque field day locations in the country. It is also no coincidence that this is perfect for VHF and UHF work and is distant enough to provide plenty of distance multipliers.

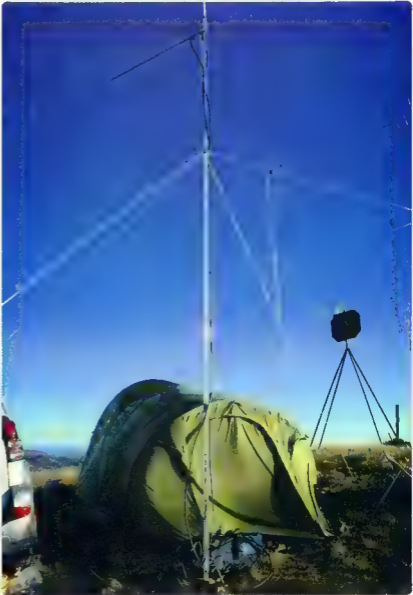
Camping gear and other essentials

Before getting on the air, it helps to have meals, sleeping quarters and other basics sorted. Having done a lot of camping previously meant the essentials were already to hand. Last year, we slept in a small two-person tent and used a tarp attached to the 4WD to shelter the operating position. This worked fine in good weather, but we were left too exposed when wind and mist blew in. This year we decided on a two-room family size dome tent to cover both sleeping quarters and operating room. Tents do work well for this purpose, but is it important

to have cross ventilation, otherwise on even an overcast day it can reach stifling temperatures inside. A floorless tent would be ideal, but these days they are hard to come by. We set one room up with air mattresses and sleeping bags, while the other room held a table and seating for our portable station. A gas stove, a 25 litre water container and cooking implements completed the kitchen arrangements. Food was pre-prepared and frozen at home so that meals were a simple matter of reheating once thawed.

This approach minimises on-site preparation time and made cleaning up easy. Proper clothing is very important when going up on hill-tops; we have experienced sweltering heat and freezing cold in the same day and learned from this to pack accordingly. Sitting at a radio for hours in cold conditions can get pretty uncomfortable if not prepared with appropriate insulating layers. Because it can also snow at any time of year in the alpine regions, we make sure to have GORE-TEX® outer layers to keep out wind and sleet.

Photo 2: Guyed aluminium masts crowd around the wind-blown tent.



Power

Petrol generators are the mainstay of most field stations, but we avoid them for a few reasons. Aside from their bulk, weight and noise, most national parks do not permit their use. There is also the hazard of carrying and dispensing fuel. Solar power has none of these issues and we have successfully employed this technology for fieldwork on many occasions. Using a combination of folding and ultra-light roll-up panels, plenty of output can be obtained to charge a couple of 88 Ah deep cycle batteries via home-brew regulators. This gives sufficient power such that both radios can run full throttle for the whole event in addition to supporting the laptops and a 12 V LED lighting system for night work.

Radio gear and antennas

With only two operators, we only run a couple of rigs. For 160-10 m, we used an FT-100D and a multiband dipole, which covers 80-10 m. To cover 160 m, a full size dipole was hastily constructed from hook-up wire just prior to leaving home. The HF antennas were arranged as inverted-Vs from a nine metre mast. The bands from 8 m to 23 cm were covered by a TS-2000X into beams and verticals. Mounting these antennas was tricky as only two masts remain to accommodate the necessary antennas. Sandpiper is a UK antenna manufacturer and they have a multiband beam that fits Yagis for 6 m, 2 m and 70 cm onto a single boom. They also make some nice high gain Yagis for 23 cm and using these in combination, we could cover all the relevant VHF and UHF bands for SSB. With a few duplexers for mixing, we then routed FM into some multiband verticals mounted on the masts above the Yagis. This arrangement allowed all bands from 160 m to 23 cm (inclusive of FM where relevant) to be set up on our three portable masts. Connecting all the gear is quite an undertaking and we have a range of coax runs and plenty of adaptors.

For HF, RG-58 is easy to work with, but losses become problematic



Photo 3: VK3GT working HF within the shelter of the tent on Sunday morning. Apparent temperature -2°C.

on the higher bands necessitating use of RG-213 or LMR400. Once all has been connected up there is always a moment of anxious anticipation as the SWR is checked on every antenna. Despite a few minor glitches, everything worked just about perfectly. It would be great to have a rotator for the beams, but this would add significantly to the equipment load, expense and power requirements. We therefore stuck with the manual 'arm-strong' method for turning them, with the cardinal points of the compass marked on the base of the mast for reference. After using paper logs in the past, we are avid converts to the free VKCL logging software; it is fantastic. In addition to being simple and intuitive to use, it keeps track of distance multipliers and three-hour block times to make the whole process of scoring a breeze.

On the air - worth the effort

Our first independent effort at field day in 2011 was an amazing experience. We were lucky that all the necessary elements came together at the time. From our location up high on an isolated alpine summit, we were very fortunate to have decent weather and no equipment failures (see 'Field Day First Timers-Australian Style' in RadCom March 2012, Vol 88, Number 3, pages 64-66 for a full description). In 2012, we refined our approach further, based on lessons learned from the previous

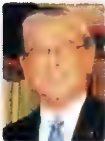
year. Using heavy-duty plastic storage tubs for organising all the equipment made packing and set up easier. With only two operators, we were kept busy for most of the time

and managed to work all bands and all blocks. It is a lot of fun to work from such a remote and beautiful place, being entirely self-reliant for everything. This year, the weather was far more challenging, with torrential rain on the trip up the mountain and freezing gale-force winds overnight. Amazingly, the antennas and masts stayed upright and no damage occurred, despite the tent almost being blown completely sideways. There seemed to be more stations around this year and from the numbers exchanged, many have scored extremely well.

The future

JMFD is firmly fixed on our calendar. The planning, organisation and challenge of portable field work is a lot of fun and every time we learn something new from our endeavours. What would enhance the experience even more would be the opportunity to work more portable stations. Consider heading out solo or getting a small group of friends together and organise your own field day effort. Whether it is solo for just a few hours on 2 m FM from a local park, or a team covering all bands from a distant hilltop, you're guaranteed to have a great time and you'll be an important contributor to an amazing event. Start planning for next year!





VK3news

Tony Collis VK3JGC

Geelong Amateur Radio Club - The GARC

AGM and Review of 2011 - 2012

As with most amateur radio clubs it was time for the AGM. Subsequently, it was determined that for the year 2012 - 2013 the Management Committee remain unchanged with Tony VK3JGC as President, Jenni VK3FJEN as Secretary and Public Officer (the latter role following Consumer Affairs Victoria recommendations) and Lou VK3ALB as Treasurer. Committee members include Calvin VK3ZPK, Carlo VK3BCL, Greg VK3VOX and a new addition, Vanessa VK3FUNY.

On the domestic front this year has been particularly eventful for

the GARC with substantial building work to the club house with the re-roofing exercise, the implementation of a high tech alarm system, the availability of internet and WiFi at the club house (courtesy of Greg VK3JYI) and the substantial replacement of lounge furniture.

In the competitive field the rise of Team VK3ALB along with the well-established interest group of LUMEG under the banner of VK3UHF have, as groups and individuals, been prominent at the top of the listings in all the WIA VHF, UHF and microwave field days this last year. Interestingly a similar enthusiasm occurred at the other end of the spectrum with the crystal set night!

During the AGM two members, Calvin VK3ZPK and Ken VK3NW, were awarded life membership status with certificates and pins for their contribution to the club over many years.



Photo 1: Calvin VK3ZPK - awarded GARC Life Membership.



Photo 2: Ken VK3NW - awarded GARC Life Membership.



Photo 3: The last order of business at the AGM is, as always, a ballot for the Ray Cowlings Award which is given to the member deemed to have contributed the most to amateur radio and the GARC during the year. This year there was a landslide vote in favour of Lou VK3ALB, shown being presented with the award by (on the left) President Tony VK3JGC.

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VK5news Adelaide Hills Amateur Radio Society (AHARS)

Christine Taylor VK5CTY

At the end of March, because there were five Sundays in the month, AHARS had the regular breakfast at the Shack. The attendance was good and friendships were renewed.

The Shack was used for the AHARS National Field Day in April as well. A sausage sizzle, mostly attended by members, did see a family call in to see what we were doing. Later in the afternoon a few more people came to see radio in action. The slow scan TV was especially interesting and we did make some contacts. Altogether 24 visitors shared the day.

Unfortunately AHARS could not use the Shack for the John Moyle Memorial Field Day as was planned as the Shack was booked for an exam that day; however, quite a number of members participated from their home stations. Next year we hope to be able to return to our usual venue near Swan Reach.

The April meeting was a member's Buy and Sell, always a good opportunity to exchange your junk for someone else's junk and a chance to have a chat with some of the people you miss out on at a normal meeting.

The new committee is now functioning well since the new Treasurer returned from his trip across the Tasman. The kits for the spectrum analysers are going like hot cakes and keeping the sub-committee busy.

The course to teach us all about PIC chips is well attended each week and is keeping members busy doing the 'homework' in preparation for the next session.

Normal meetings with a speaker will resume in May and will be held on the third Thursday of each month in the Blackwood Senior Citizens' building on Young Street, Blackwood. Meetings start at 7.30 pm with the speaker and the General Meeting is held after supper. Visitors are all welcome.



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VK3news Amateur Radio Victoria

Jim Linton VK3PC

✉ arv@amateurradio.com.au

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AGM a great success

On the autumn night of 16 May, members gathered for the Annual General Meeting of the Wireless Institute of Victoria trading as Amateur Radio Victoria, and a good evening was enjoyed.

The President Barry Robinson VK3PV expressed his thanks for the support he had received and expressed appreciation to the office volunteers who work behind the scenes to maintain our records and services. He made mention of the busy year with the Foundation course training and bridging sessions run by Kevin Luxford VK3DAP/ZL2DAP and the assessors who processed many successful candidates.

A feature event was the International Lighthouse and Lightship Weekend in August at the Timeball Tower in Williamstown. The same venue was used in April 2011 for the WIA National Field Day to show off amateur radio to the public.

The celebration of 100 years since the formation of the organisation now known as Amateur Radio Victoria saw a special call sign VK100ARV used by many volunteers during last November, amassing 5,500 contacts and many Centenary Award certificates were issued. During the six months of the anniversary we also held the world's first Digital TV QSO Party and it gave a further boost to the Keith Roget Memorial National Parks Award.

Among other events he mentioned were the running of the Centre Victoria RadioFest at the Kyneton Racecourse, the VK3RAN activation on HMAS Castlemaine and Peter Mill VK3APO and his team of repeater network volunteers.

The Acting Secretary and Treasurer Ross Pittard VK3CE reported that the organisation again finished the year with a small surplus. It was pleasing that the organisation was successful in obtaining grants enabling the restoration of HF broadcasts and also funds to restore the facility at Mt Stanley. He noted we were the only ones in Victoria to be running bi-monthly Foundation licence courses and the well-attended bridging courses.

New Life Member

It was the pleasure of Barry VK3PV to bestow the honour of Life Membership to Peter Cossins VK3BFG, who was most humbled. For four decades he has been involved with the pursuit of amateur television. His recent digitisation of the repeater VK3RTV saw ATV interest locally, interstate and overseas increase, and numerous articles and digital projects eventuated. He has visited many clubs and groups over the years with talks about ATV showing himself as a real ambassador for the mode.

Peter VK3BFG has readily had input on the many changes that faced ATV over the years in terms of frequency allocation and band planning. He also spent time in the 1970s and 80s as an announcer on the WIA broadcast, and was a technical person who kept the public face of amateur radio going at the Science Museum of Victoria. A fuller story on our newest Life Member will be published soon. Congratulations for a very well-earned honour to a deserving individual who keeps on serving us so well.

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M b vert auto switch 10-80 m	\$360
40 m 1/2 in load 2 el. cap hats	\$670
6 m 5 el 3.6 m 1 boom	\$314
6 m 7 el. 6.8 boom bal feed	\$456
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2 m 10 el. hi/gain Yagi	\$190
Quad 2 el. 20 m heavy duty	\$596
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Putting it across - Talking about amateur radio

Geoff Emery VK4ZPP

The Wireless Institute sponsored National Field Day with the accompanying media packs has provided the opportunity for increasing the awareness of the non-amateur community.

To start at the beginning; it is worth remembering who and what attracted us to this hobby. For me, it was a curiosity about things electrical which was fostered at school. However, it was the contact and discussions with my local amateurs, who shared their pleasure with a gangly schoolboy, that gave me a life time of enjoyment.

As I progressed through high school, it was getting to meet the older brother of two friends that really gave me the impetus to sit another exam. This older brother was an amateur and apart from his adventure of a year on Macquarie Island, he both worked and relaxed in the area of radio. More importantly, as I have learned since, this man fostered an interest in this recreation in many others apart from me.

For me it has been this absolute enthusiasm and the generosity of spirit in sharing knowledge and building the desire that has been the hall mark of the amateur radio operator.

The reason that I mention my experience is that many people seem to struggle to find the reason or at least speak about the reason they joined the amateur ranks. If we can think out the "who, where and why" of how we came to make this journey, it will certainly be easier when we are speaking with interviewers or drafting press releases.

Of course there is a big trap to avoid in our talks. Our hobby abounds with so much jargon that

it is easy to confuse people. If we remember to say things in plain language rather than "Q" Codes or CW abbreviations we can be reasonably assured that people will understand us. Couple this with the enthusiasm that shows in the way we stand, the way our voice comes across and the expressions of our face, then someone seeking a personal interest will sense the honesty of our belief.

The press like to use one or more photos to illustrate an article. This is where we need to think about how we present. Try not to confuse the images. Dress to enhance the message. By all means wear club or WIA clothing but do not take away by sporting a baseball cap which advertises something else. Generally speaking, if we keep our heads uncovered, people looking at the pictures will perceive we are more open with nothing to hide.

A professional photographer or cameraman will try and pose or construct the images to enhance the story. If we are shooting images to accompany a media release, try and use the same techniques.

It is perhaps wise to remember that personal grooming can assist in giving a good image. Tidy hair and clean fingernails are easily achieved. We might have our own idiosyncrasies but when we feel proud to represent our hobby, then a little spit and polish can help.

When it comes to the broadcast media, I think we have all heard the person that tries to be some-one else. *It is important to be ourselves!* The broadcasters have the training and experience to control the interview which allows us to sound and appear natural. Of course, the "background" information that

was supplied prior to the interview will help contain the range of the interview to areas where we remain comfortable as much as help the broadcaster direct their questions.

If we are manning a public display, the pre-publicity will attract people that are looking to learn about amateur radio. The display will attract the curious. What has been stated about talking with the media should have provided focus for our conversations with members of the public, also. This is the point that we are showing our activities, we are not selling amateur radio. We are sharing our experiences not demonstrating a product.

What all this means is that we are being authentic. Normal responses to people are what are expected. If you feel uncomfortable with some-one, then do not feel obliged to invite them to your shack. If people are interested offer them the opportunity to participate in the day's activities and give them a suitable brochure with club contact details. Be prepared to visit families and introduce yourself (and your club) if the person is of school age. Even the offer of transport, to club meetings and activities, is a good way of sustaining interest.

When we look through the pages of *Amateur Radio*, we can see how many people enjoy this hobby and are getting the word out. This makes us part of a large club. When it comes back to you and me we are just spreading the message of this club. When we respect as well as enjoy that club, we can all do a bit to share the message of amateur radio.

Contests

Phil Smeaton VK4BAA
e vk4baa@wia.org.au

Welcome to this month's Contest column.

CQ WPX 2012 SSB – submitted VK logs

Submitted VK logs for the WPX contest are shown below. The list of logs seems to grow year by year and is a good indication of how VK is represented on the bands. The range of entry categories appears to be widening as well, with several stations targeting the myriad of records available for the contest.

Contest Calendar for June 2012 – August 2012

June	2/3	IARU Region 1 Field Day	CW
	9	Asia / Pacific Sprint	SSB
	16/17	All Asia DX	CW
	23/24	WIA Winter VHF/UHF Field Day	All
	23/24	ARRL Field Day	All
July	14/15	IARU HF World Championship	CW/SSB
	21/22	CQ Worldwide VHF Contest	All
	28/29	RSGB IOTA Contest	CW/SSB
August	4	TARA Grid Dip	PSK/RTTY
	4	Waitakere (NZART) Sprint	CW
	4/5	10-10 International QSO Party	SSB
	11/12	Worked All Europe	CW
	11/12	Remembrance Day Contest	CW/SSB/FM
	25/26	ALARA Contest	CW/SSB

Note: Always check contest dates prior to the contest as they are often subject to change.

VK100	SINGLE-OP	ONE	ALL	LOW	ASSISTED	
VK2BCQ	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED	
VK2BO	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED	TB-WIRES
VK2ERP	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED	
VK2KDP	MULTI-OP	UNLIMITED	ALL	HIGH	ASSISTED	
VK2PN	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED	
VK2TTP	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED	
VK3AVV	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED	
VK3FM	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED	
VK3GK	SINGLE-OP	ONE	15M	HIGH	NON-ASSISTED	
VK3NRW	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED	TB-WIRES
VK3TDX	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED	
VK3TZ	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED	
VK3VTH	SINGLE-OP	ONE	40M	LOW	NON-ASSISTED	TB-WIRES
VK4ATH	SINGLE-OP	ONE	ALL	QRP	NON-ASSISTED	
VK4BL	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED	TB-WIRES
VK4CT	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED	
VK4FATT	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED	
VK4GH	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED	
VK4IU	SINGLE-OP	ONE	ALL	HIGH	ASSISTED	
VK4KW	MULTI-OP	UNLIMITED	ALL	HIGH	ASSISTED	
VK4NM	MULTI-OP	ONE	ALL	HIGH	ASSISTED	
VK4QH	SINGLE-OP	ONE	40M	HIGH	ASSISTED	
VK5PAS	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED	ROOKIE
VK5UE	SINGLE-OP	ONE	20M	LOW	NON-ASSISTED	TB-WIRES
VK6IR	SINGLE-OP	ONE	ALL	HIGH	ASSISTED	
VK6MAB	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED	ROOKIE
VK7GM	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED	
VK7GN	SINGLE-OP	ONE	10M	HIGH	NON-ASSISTED	
VK7XX	CHECKLOG				ASSISTED	
VK7ZX	SINGLE-OP	ONE	40M	HIGH	NON-ASSISTED	
VK8AA	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED	
VK8AS	SINGLE-OP	ONE	15M	HIGH	NON-ASSISTED	

Logging Programs - Different strokes for different folks

The choice of contest logging program is very much a personal one. The choice might be driven by such aspects as circumstances, contest particulars, equipment, future aspirations or possibly just the wallet. The choice of available software is mind boggling nowadays, but it can generally be split into two distinctive contest 'camps': domestic and DX.

Some programs try to be all things to all men, whilst others are developed for a focussed selection of contests for a given country or format. This domestic approach is often driven by the reluctance of some software producers to equip their logger with facilities which are utilised by a small group of users. Many of the VK based contests fall into this category with specific software often being produced as a result.

So, if your domestic needs are mainly satisfied by 'local' software producers, but you have desires towards international contesting, which software package is best?

This question is a very personal one. Courting opinion from other contesters is often a way to fast-track an answer, but the responses will possibly tend to feature the 'flavour' of the orator so the recipient will need to filter accordingly. Personally, I have no axe to grind either way as regards software selection for personal usage, but I do tend to slope towards familiarity.

Some popular software packages currently in use include N1MM, Win-Test, Writelog, TR4W, CT and SD. CT is an old DOS based program which was originally designed for CWV usage but got tweaked over the years to accommodate phone contests also. For a while, CT was the only software which permitted networking – albeit a complex setup to achieve it. I speak from experience! Similarly, SD (originally 'Super Duper') started life using the

DOS system but soon spread its wings to the Windows platform. CT originally required a payment to be made, as did SD, but both are now freeware and only SD continues to enjoy support from the author.

For the sake of simplicity, let's focus on N1MM, Win-Test and Writelog. Why? Well, they are the most popular packages, they cover the most popular bands, they run on modern PC platforms, they all provide facilities for the most popular contests and they all continue to be supported by their authors.

So, what is needed?

The Basics

The software is not going to be much help if it does not do the following:

- Log the QSO – callsign, report, band, mode, serial number and report sent/received, other exchange data
- Check for dupes
- Indicate multipliers (mults)
- Score the contest
- Easy to use user interface

Other more advanced aspects which may be perceived as desirable might include:

- Assign multi rig/user serial numbers
- DX Cluster linkage
- Data for tactical decisions to be made 'on the hoof'
- SO2R facilities
- Networking
- Multi-op facilities
- Specific mode facilities
- Contest coverage
- Rig inclusion
- Software bug support

Checking for multiplier status is important and the level of importance is determined by the rules of the respective contest. The main time that this data is required is either during S&P operation so that a judgement can be made as to whether or not to hang around during a pile-up, or when running to allow the operator to make a call as to whether or not it is worth moving the station to another band. All of

the software listed performs this task, but Writelog used to have the limitation of not showing double mults which are needed for CQWW contests. A later version may have cleared this anomaly up of course. N1MM shows mults using colours to denote single and double multipliers as well as duplicates, but also has a window which shows wanted QSO and mults per band based upon data from a DX Cluster or another external source. Win-Test also shows this type of information in a similar manner.

All of the software features a band map, which tracks the frequency of the rig VFO and shows the location of stations within the band along with their 'status' as regards mults etc. Clicking the mouse on the callsign will make the callsign appear in the QSO entry window and the rig will jump to the frequency shown within the window. All of the software also displays a QSO rate meter, which informs the operator as to how many QSOs have been logged within a given period of time. The display will also show what a mult is 'worth' is respect to the points value of QSOs. So, a multiplier might be worth chasing and cracking a pile-up, or if the QSO rate is thundering along then the mult can hopefully be mopped up later when the rate drops. All of the software shows a running total of the score for the contest.

The operator interface is very much a personal choice. I like to keep things as simple as possible on the screen as I have enough to do without lots of information confusing me at three in the morning. I also prefer to see the log being populated on the screen by all stations, in real time. N1MM helps, by displaying if a callsign has been worked on any other band/s during the contest. Some operators like to have an indication of how they are performing in relation to a pre-set range of 'goals' – possibly as a running litmus test in comparison to the previous year's score.

N1MM performs this role very easily and clearly for example, by importing the log from a previous contest.

The cluster interface is important to some and the means of setting it up and then using the data needs to be as simple as possible. This data is usually displayed within a separate window and can be made to populate the band map 'automagically'. Win-Test does this particularly well, with multiple sources able to be configured.

For RTTY use, all of the software can utilise the MMTTY interface software seamlessly.

All of the software caters for multi-operator operation. All feature facilities for Inter-station communication utilising Windows networking; Cluster multiplier spot distribution; band change counters and transmit interlocks.

As regards software author support, N1MM is very well supported, as is Win-Test, but WriteLog is not so well supported with a few bug fixes or additional features being made available in recent times but nothing as frequent as N1MM. Maybe WriteLog authors make less software errors! New rigs coming onto the market are well supported by N1MM and Win-Test.

So, a brief look at the basic and some of the not-so-basic features of contest logging software. Do some

research and try some yourself before committing, if you can. It's a very personal thing!

WRTC 2014 – The contenders

The World Radiosport Team Championship (WRTC) is held every four years and consists of approximately 50 two-person teams of amateur radio operators competing in a test of operating skill. Unlike most on-the-air competitions, all stations are required to use identical antennas from the same geographic region, eliminating all variables except operating ability.

Rather like the Olympics, a host country 'runs' the WRTC. Previous WRTCs have been held in Seattle (1990), San Francisco (1996), Slovenia (2000), Finland (2002), Brazil (2006), and Russia (2010).

The WRTC Sanctioning Committee is responsible for choosing the sponsor and location for each event. Hosting rights for the 2014 WRTC have been awarded to the New England WRTC2014 Organizing Committee. This organization is a newly-formed independent group, and not part of any existing organization, national society, or club.

Qualifying Events

Anyone interested in operating in WRTC-2014 can attempt to qualify by operating in a variety of

qualifying events between October 2010 and March 2013. Each qualifying event has a maximum point value that is factored into the qualifying score calculation. Listed below are the eligible contests for WRTC-2014, their point values, and in which years that each contest's results will be considered for VK entrants. See Table 1 below.

Applicants may use up to 12 published scores from the above contests to calculate their qualifying score.

Category Weighting Factor

Weighting factors are applied to compensate for differences in competitiveness and activity level in the various entry categories. See Table 2.

For VK, Oceania is split into north and south. This means that VK entrants would not be competing against Hawaiian stations, for example.

Qualifying Event Score Calculation

The Event Score for each qualifying event is calculated based on the following formula:

$$\text{Event Score} = (\text{Contest value}) \times (\text{Category weighting factor}) \times (\text{Published final score} / \text{Maximum score in applicant's category from Selection Area})$$

Table 1

Contest	Value	Years in which scores can be counted				Number of scores
		2010	2011	2012	2013	
CQ WW CW	1000	X	X	X		3
CQ WW SSB	1000	X	X	X		3
CQ WPX CW	950		X	X		2
CQ WPX SSB	950		X	X		2
IARU	900		X	X		2
Russian DX Contest	900		X	X		2
ARRL DX CW – outside NA	800		X	X	X	3
ARRL DX SSB – outside NA	800		X	X	X	3
WAE CW	800		X	X		2
WAE SSB	800		X	X		2
All Asian DX CW	800		X	X		2
All Asian DX SSB	800		X	X		2
Oceania DX CW	800		X	X		2 – OC only
Oceania DX SSB	800		X	X		2 – OC only

The full explanation of the scoring can be found on the WRTC website. John VK4EMM is currently VKs leading station for WRTC with 4305 points, with Vlad VK2IM snapping closely at John's heels with 3611 points. If you hear these blokes on the bands be sure to give them a shout as they will probably need your support. Good luck chaps!

Let's be careful out there...

With the kW licence variations now being available, many contesters will be taking full advantage of the increase of transmitted power permitted. To achieve the higher output, many will have been raiding the piggy bank and making a commitment in cash towards an amplifier of some sort.

There are a number of solid state amplifiers available on the market which can achieve the VK limit, but most tend to be based upon valve technology. With this comes the risk and temptation to delve into the innards if/when a fault occurs. Several times over past years hams have been hurt, or killed, poking around inside tube-type amps with power on. Some magazines, with total disregard for common sense, have even published articles

Entry Category	Weight
SO HP (Single Operator High Power) (All Band or Single Band)	1.0
SO LP (Single Operator Low Power) (All Band or Single Band)	0.9
SO QRP (All Band)	0.7
SO Assisted (SO Unlimited)	0.8
SO Single Mode (in Mixed-mode contests only)	0.9
MS (Multi-operator Single-transmitter)	1.0
MS LP (ARRL DX, SS only)	0.9
M2 (Multi-operator Two-transmitters)	0.8
MM (Multi-operator Multi-transmitter)	0.8

Table 2

suggesting people defeat safety interlocks to make a measurement with a hand-held meter. A story surfaced recently about an AL1200 amplifier, which has about 3600 volts inside. Apparently someone instructed someone else to measure HV with a small handheld meter. As the story goes, the handheld meter blew up.

I would like to suggest to everyone to remind others, when they see or hear something like this going on, to say something before it happens, if possible. It is never necessary to run an amplifier with the cover off and especially with the HV energised, to check things. Anyone advising defeating an interlock, or powering-up a tube-

type amplifier with the cover off and HV exposed, is putting themselves at serious risk of injury or possibly even death.

If we do not know anything about electronics or how things work, at least we should know what we should never do. If a problem develops in the amplifier, get someone competent to take a look at it for you.

If you have any contest related material for inclusion within the column, topics that you would like covered or even some experiences and pictures you would like to share, then please feel free to get in touch via vk4baa@wia.org.au

See you on the bands.

73 de VK4BAA Phil Smeaton



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John Moyle Memorial Field Day 2012

Denis Johnstone VK4AE/VK3ZUX

Contest Manager

24 Hour Portable Operation – Multiple Operator

Call Sign	Operators	Mode	Band	Contacts	Score	Place/Award
VK3ER	Multi	All	All	1,050	10,026	1 <i>1st</i>
VK4WS	Multi	All	All	411	1,940	2 <i>1st</i>
VK3YVG	Multi	All	All	337	1,848	3 <i>1st</i>
VK2SRC	Multi	Phone	All	739	6,663	1 <i>1st</i>
VK5SR	Multi	Phone	All	368	4,192	2 <i>1st</i>
VK3CNE	Multi	Phone	All	562	3,846	3 <i>1st</i>
VK3JNH	Multi	Phone	All	347	3,617	4 <i>1st</i>
VK3ANR	Multi	Phone	All	511	2,273	5 <i>1st</i>
VK4WD	Multi	Phone	All	719	2,066	6 <i>1st</i>
VK2BOZ	Multi	Phone	All	484	2,060	7 <i>1st</i>
VK3APC	Multi	Phone	All	166	1,457	8 <i>1st</i>
VK3CMZ	Multi	Phone	All	216	887	9 <i>1st</i>
VK6AHR	Multi	Phone	All	245	551	10 <i>1st</i>
VK8ARG	Multi	Phone	All	203	473	11 <i>1st</i>
VK5GRC	Multi	Phone	All	104	312	12 <i>1st</i>
VK5OM	Multi	Phone	VHF	174	4,616	1 <i>1st</i>
VK2EH	Multi	Phone	VHF	72	1,062	2 <i>1st</i>
VK4IZ	Multi	All	HF	679	2,114	1 <i>1st</i>
VK2AOJ	Multi	All	HF	286	676	2 <i>1st</i>
VK2WG	Multi	All	HF	135	284	3 <i>1st</i>
VK5LZ	Multi	Phone	HF	1038	2,066	1 <i>1st</i>
VK3FRC	Multi	Phone	HF	745	1,490	2 <i>1st</i>
VK2CL	Multi	Phone	HF	571	1,136	3 <i>1st</i>
VK3AWG	Multi	Phone	HF	266	533	4 <i>1st</i>
VK2ARQ	Multi	Phone	HF	221	442	5 <i>1st</i>
VK2AZD	Multi	Phone	HF	204	408	6 <i>1st</i>
VK8DA	Multi	Phone	HF	135	270	7 <i>1st</i>
VK7WON	Multi	Phone	HF	132	264	8 <i>1st</i>
VK8AR	Multi	Phone	HF	110	214	9 <i>1st</i>
VK1BEX	Multi	Phone	HF	80	160	10 <i>1st</i>
VK2MB	Multi	Phone	HF	74	156	11 <i>1st</i>
VK4WT	Multi	Phone	HF	14	28	12 <i>1st</i>

Six Hour Portable Operation – Multiple Operator

Call Sign	Operators	Mode	Band	Contacts	Score	Place/Award
VK3AWS	Multi	Phone	All	169	955	1 <i>1st</i>
VK2XE	Multi	Phone	All	199	400	2 <i>1st</i>
VK4BAR	Multi	Phone	All	63	181	3 <i>1st</i>
VK2SF	Multi	Phone	HF	195	390	1 <i>1st</i>
VH2HZ	Multi	Phone	HF	111	222	2 <i>1st</i>
VK2BOR	Multi	Phone	HF	53	106	3 <i>1st</i>
VK4WL	Multi	All	All	170	470	1 <i>1st</i>
VK4CHB	Multi	All	HF	40	72	1 <i>1st</i>

24 Hour Portable Operation – Single Operator

Call Sign	Operators	Mode	Band	Contacts	Score	Award
VK4OE	Single	Phone	All	155	1 802	1 <i>1st</i>
VK2JUB	Single	Phone	All	141	1,120	2 <i>1st</i>
VK2FAD	Single	Phone	All	135	687	3 <i>1st</i>
VK5AR	Single	Phone	All	89	326	4 <i>1st</i>
VK5PX	Single	Phone	All	86	260	5 <i>1st</i>
VK3KQ	Single	Phone	VHF	82	974	1 <i>1st</i>
VK4KRX	Single	Phone	HF	266	532	1 <i>1st</i>
VK6SH	Single	Phone	HF	206	412	2 <i>1st</i>
VK4MON	Single	Phone	HF	178	356	3 <i>1st</i>
VK5MH	Single	Phone	HF	137	274	4 <i>1st</i>
VK2FOWL	Single	Phone	HF	21	42	5 <i>1st</i>
VK2KGH	Single	Phone	HF	10	20	6 <i>1st</i>
VK1WJ	Single	All	All	45	171	1 <i>1st</i>

Six Hour Portable Operation – Single Operator

Call Sign	Operators	Mode	Band	Contacts	Score	Award
VK3WAM	Single	All	VHF	78	1,069	1 <i>1st</i>
VK3PI	Single	Phone	VHF	105	730	1 <i>1st</i>
VK3VMC	Single	Phone	VHF	27	320	2 <i>1st</i>
VK3FIX	Single	Phone	VHF	23	270	3 <i>1st</i>
VK5LD	Single	Phone	VHF	26	131	4 <i>1st</i>
VK5RX	Single	Phone	All	129	623	1 <i>1st</i>
VK3LLL	Single	Phone	All	112	709	2 <i>1st</i>
VK4ADC	Single	Phone	All	159	539	3 <i>1st</i>
VK5ZT	Single	Phone	All	102	228	4 <i>1st</i>
VK3AHT	Single	Phone	All	45	100	5 <i>1st</i>
VK5CZ	Single	All	HF	63	132	1 <i>1st</i>
VK3YE	Single	All	HF	20	46	2 <i>1st</i>
VK4JAZ	Single	CW	HF	4	16	1 <i>1st</i>
VK4GH	Single	Phone	HF	231	462	1 <i>1st</i>
VK3HJA	Single	Phone	HF	146	292	2 <i>1st</i>
VK3ZPF	Single	Phone	HF	111	222	3 <i>1st</i>
VK5DG	Single	Phone	HF	105	210	4 <i>1st</i>
VK3ZO	Single	Phone	HF	102	204	5 <i>1st</i>
ZL2AYZ	Single	Phone	HF	101	202	6 <i>1st</i>
VK4JHO	Single	Phone	HF	20	40	7 <i>1st</i>
VK2IO	Single	Phone	HF	14	28	8 <i>1st</i>
VK4O	Single	Phone	HF	13	26	9 <i>1st</i>
VK3KPR	Single	Phone	HF	12	24	10 <i>1st</i>
VK4HSV	Single	Phone	HF	5	10	11 <i>1st</i>

1st Certificate Awarded

1st President's Cup

1st Participation Certificate

Home Station – 24 Hour

Call Sign	Operators	Mode	Band	Contacts	Score	Award
VK4VIX	Home	O	All	384	1,118	1 *
VK3MY	Home	O	All	176	960	2 *
VK4KLC	Home	O	All	214	686	3 *
VK3KS	Home	O	All	138	394	4
VK3LAC	Home	O	All	158	389	5
VK2TP	Home	O	All	227	371	6
VK1MAT	Home	O	All	237	364	7
VK4MJF	Home	O	All	64	280	8
VK5FTCT	Home	O	All	129	211	9 /S
VK3PHI	Home	O	All	79	210	10
VK3RU	Home	O	All	48	206	11
VK2WJ	Home	O	All	76	200	12
VK4FATT	Home	O	All	119	193	13/S
VK4ZW	Home	O	All	118	192	14
VK3AKG	Home	O	All	34	159	15
VK2LNP	Home	O	All	46	111	16
VK3OHM	Home	O	All	18	71	17
VK3EEE	Home	O	All	26	44	18
VK6XS	Home	O	All	19	40	19
VK2LAW	Home	O	HF	718	1,031	1 *
VK5PAS	Home	O	HF	494	731	2 *
VK2KDP	Home	O	HF	408	582	3 *
VK4PAAS	Home	O	HF	191	294	4 /S
VK4MIT	Home	O	HF	195	293	5
VK4ATH	Home	O	HF	135	230	6
VK5MTM	Home	O	HF	125	188	7
VK3TCX	Home	O	HF	59	101	8
VK4SR	Home	O	HF	61	100	9
VK7GM	Home	O	HF	51	90	10
ZL3AKM	Home	O	HF	44	70	11
VK3LDR	Home	O	HF	35	58	12
VK4NI	Home	O	HF	32	49	13
VK3HSR	Home	O	HF	30	47	14
VK5LQL	Home	O	HF	22	42	15
VK5EYH	Home	O	HF	22	41	16
VK2HGO	Home	O	HF	24	39	17
VK5YX	Home	O	HF	23	35	18
VK1HW	Home	O	HF	14	24	19
VK4KML	Home	O	HF	13	22	20
ZL2COL	Home	O	HF	5	7	21
VK3OIP	Home	O	VHF	66	616	1 *
VK3JTM	Home	O	VHF	44	518	2 *
VK3AC	Home	O	VHF	54	204	3 *
VK3HQ	Home	O	VHF	15	97	4
VK3TPH	Home	O	VHF	24	63	5
VK6ALU	Home	O	VHF	3	6	6

Home Station – 6 Hour

Call Sign	Operators	Mode	Band	Contacts	Score	Award
VK2DAG	Home	O	All	167	291	1 *
VK2AFY	Home	O	All	164	261	2 *
VK4HBG	Home	O	All	44	91	3 *
VK2YV	Home	O	All	27	44	4
VK5PPW	Home	O	All	10	22	5 /S
VK3BQ	Home	O	VHF	23	102	1 *
VK2MCI	Home	O	HF	197	291	1 *
VK2ATZ	Home	O	HF	215	288	2 *
VK3VTH	Home	O	HF	52	78	3 *
VK4TDI	Home	O	HF	44	75	4
VK5FJ	Home	O	HF	24	42	5
VK2FHRK	Home	O	HF	27	40	6 /S
VK2FVRJ	Home	O	HF	22	37	7 /S
VK4NP	Home	O	HF	15	26	8
VK2JMA	Home	O	HF	10	16	9
VK6PSAP	Home	O	HF	11	11	10 /S
VK2VJB	Home	O	HF	4	7	11

1* Certificate Awarded

2* President's Cup

3* Participation Certificate

It was good to see several ZL stations take part this year, and three stations submitted their log. Well done to all who took part.

I have included in the results all of the logs that I received and if any are missing, they are completely lost. I can only offer my apologies to anyone so affected. I am sorry if your log is missing, but it did not get it to me despite my most careful procedures and cross checking.

Based upon submitted logs, there were some 22,173 contacts, (a 6.3% increase over 2011) accumulating some 88,270 points claimed, (a 23% increase from 2011). This was pretty heavy contesting for an Australian field day contest, but unfortunately it resulted in just 140 logs being received.

Unfortunately, the numbers of stations who went to the considerable trouble of going out and setting up as a portable station and then not bothering to submit a log as an entry, is still a disappointment. Some multiple operator stations got very big scores this year and perhaps that simply reflects the great and varied planning and implementation efforts required to assemble and operate a multi operator station. See Table 1.

Activity was carried out on all bands permitted under the rules. There was not a noticeably increased activity on HF, and the frequencies in use seemed unaffected by the increasing sunspot cycle. This sunspot cycle is ascending off the bottom of the cycle but conditions did not appear to improve substantially this year. There was a slight 6m boost apparent in.

In the higher UHF and Microwave bands there was a decrease in activity; maybe it follows a weather cycle, rather than the solar cycle? Maybe it only takes a couple of club stations to not operate to make the difference?

Comments on John Moyle Memorial National Field Day 2012

This year's entries came from every Australian mainland call areas, as well as from Tasmania and New Zealand. The total number of logs submitted was 140. This was an increase from the 129 logs received last year.

Band	S/UHF		VHF		HF	
	Points	Contacts	Points	Contacts	Points	Contacts
24 GHz	0 (0)	0 (0)				
10 GHz	22 (184)	1 (12)				
5.7 GHz	22 (154)	1 (8)				
3.4 GHz	57 (284)	8 (22)				
2.4 GHz	982 (494)	58 (41)				
23 cm	4,819 (3,193)	333 (319)				
70 cm	14,345 (9,511)	1,201 (962)				
2 m			25,154 (17,902)	2,131 (1,841)		
6 m			9,439 (6,882)	775 (564)		
10 m					119 (202)	66 (97)
15 m					170 (410)	92 (185)
20 m					8,164 (6,719)	3,981 (3,374)
40 m					18,194 (18,652)	10,006 (9,764)
80 m					6,739 (7,028)	3,518 (3,621)
160 m					44(121)	22 (55)
Total	20,247 (13,820)	1,602 (1,364)	34,593 (24,784)	2,906 (2,405)	33,430 (33,132)	17,665 (17,088)

Table should be read – **2012 results in bold** (with (2011 results) in brackets)

Table 1.

The scoring in the UHF range was slightly up from last year. The VHF range the number of contacts is slightly higher than for 2011. The absence of many VK2 and VK4 club stations, because of the miserable weather in some parts certainly reduced activity, with many stations making such comments.

The other major change noticed this year was the decrease in Portable Station operation, and an increase in Home Station operation. Clearly as there were some portable station operators who did not bother to submit a log they are strongly encouraged to do so next year. However the change in the Home Station scoring resulted in increased activity.

The participation across the various Call Areas was patchy. There was an increase in Portable stations in only VK2, while the other states all showed a decrease with VK7 activity also down on last year. See Table 2.

All of the portable stations that went to the effort to send in a log will get a certificate. The WIA believes that those who made the effort to set up and operate

a portable station should be acknowledged. In line with last year, the Foundation License logs who did not achieve a placing were instead awarded a Participation Certificate for encouragement.

A pleasing increase to nine Foundation Licensed operators submitted a log. (Four from VK2, none were from VK3, two were from VK4, two from VK5 and one from VK6.) There were many more stations than this logged during the contest. All logs submitted

by Foundation operators were awarded a certificate. Logs from club station showed that quite a number also took part, as part of the club station effort. See Table 3.

This year, the rules again stated that Excel is the preferred submission format. A sample linked Excel logging report was prepared and sent to those who requested this file. (Contact me at vk4ae@wia.org.au if you would like a copy of my linked spreadsheet in Excel for next year.)

Call Area	Portable		Home		Total	
VK1	2	4	2	0	4	4
VK2	18	15	15	10	33	25
VK3	21	23	18	12	39	34
VK4	16	14	14	9	30	23
VK5	13	14	8	10	21	24
VK6	3	7	3	2	6	9
VK7	1	2	1	2	2	4
VK8	2	3	0	0	2	3
P2	0	0	0	0	0	0
ZL	1	2	2	1	3	3
	77	84	63	46	140	129
	2012	2011	2012	2011	2012	2011

Table 2.

Comparison between 2012 and Earlier Years

Year	Logs	Contacts	Points
2012	140	22,173	88,270
2011	129	20,857	71,736
2010	122	23,573	80,087
2009	124	20,773	71,041
2008	104	17,258	68,940
2007	76	12,535	64,028
2006	78	10,865	61,387
2005	67	8,423	44,080
2004	66	8,602	49,855

Table 3.

Other suitable file submission formats are Word, txt or the ADI output file from VKCL (VK Contest Log). PDF format is not acceptable as are JPG and TIFF.

All logs submitted in an electronic form this year, were fully readable.

The new General rules for WIA contests were issued prior to this year's contest requiring all logs to be submitted in Cabrillo format to fall into line with contests in other countries. There was insufficient time available to prepare a template and revise the contest scoring software. In the event there were no logs submitted in that format. Hence the time spent on creating suitable software by the author was completely wasted. It is viewed that, in Australia, there is negligible interest among most operators to go down this path to follow overseas contests by banning paper logs and only submitting logs in Cabrillo format. Hence it is likely that the rules of this contest will not change to follow this model.

There were still only 91% of logs submitted electronically this year, up from last year. This has been due largely to the excellent work by Mike Subocz VK3AVV and his worthy program VKCL (VK Contest Log). Those that submitted a log in the VKCL export format were as usual very easy to work with. Those that simply forwarded the text output of VKCL were also rather simpler to work with than any form of posted paper log or a log completed by hand.

Paper logs may also be used. A small log from an individual operator is and will remain completely acceptable. Large paper logs require a very considerable manual work on the part the contest manager to input the data into the contest database and are no longer permitted. It is so much better to forward the computer files used to print the paper log as part of an e-mail as the data can then be easily extracted and used for checking purposes.

Next year, club stations will only be eligible to submit an entry, if their log is submitted electronically. (Paper logs from club stations are welcomed as a backup, if required, but the extensive amount of work required to manually check large paper logs is no longer acceptable, especially if the club station log has been prepared on a computer.)

A note for all HF Stations: Any HF contacts are valid HF scoring contacts, whether they are from VK ZL or P2 stations or stations from overseas. Overseas stations cannot submit a log to the contest, but can exchange numbers with stations participating in the Field Day Contest. They are to be scored as a Portable station contact.

The comparative difference in score and scoring between HF and VHF/UHF contacts

In fact within the John Moyle Contest, the rules allow for some 35 possible alternative categories as shown below. Each category is actually completely independent from every

other category and so there are in fact 35 parallel contests. In this way it is completely different from any other contest presently in Australia.

For this reason it is not possible to have overall winner in this contest, as scores from any category, especially between different bands and different modes are not directly comparable. Only scores within the same category are correctly comparable. The award of the Presidents Cup is a parallel contest. It is awarded to the highest score from a Club Station, affiliated with the WIA, in any category.

However, there were two very contentious problems to do with scoring of contacts arose:

1. The comparative difference in score and scoring between Portable and Home Stations HF and VHF/UHF contacts.

A number of Home stations observed last year that with the miserable weather especially in VK2 and VK4 the number of club stations in the field was lower than usual. A number of stations who would normally have ventured into the field suggested that in the event of miserable weather many stations would have operated as Home Stations, but felt that with the 'Abysmal Score' afforded to Home Stations in contact with a Portable Station, irrespective of the distance and effort involved. The JMMFD is not intended as a vhf DX contest, but due to the presence of increased numbers of field stations at good vhf locations it does become at least a QSO

Table of Existing categories

Operators		Modes				Bands		
	Time							
Multi	24	Phone	CW	Digital	All	HF	VHF	All
Multi	6	Phone	CW	Digital	All	HF	VHF	All
Single	24	Phone	CW	Digital	All	HF	VHF	All
Single	6	Phone	CW	Digital	All	HF	VHF	All

Home	24
Home	6

HF	VHF	All
HF	VHF	All

SWL	24
-----	----

party, with portable contacts being made feasible that are usually not available.

As one of the goals of the contest is to actively promote portable capability and as a training exercise for emergencies, thus the rules need to be framed around those objectives. The rules encourage field stations, while providing incentives for the stations they want to work (including home stations) to give them as many contacts as possible.

For the field day contest it is my view that Home Stations are not competing with Portable Stations, so giving them the same points as Portable Stations does not treat either side of the contact fairly. Home Stations are competing only with other Home Stations, and one that can work a far distant VHF field station deserves a reward that the other station who cannot work the DX, has to work hard to make up for.

Another regular request is to include a Multi Operator category for Home Stations. This is not supported, as this change would unnecessarily greatly increase the number of categories.

2. The issue of scoring for CW contacts

The number of All Mode contacts was very significantly higher than in the recent past. A good sign!

While CW is no longer a precondition for obtaining an Amateur licence, it is a skill that is widely distributed among existing operators and a skill that should be nurtured among the newer licence holders.

The rules for 2012 were adjusted to allow doubling the score for a contact on CW. For HF this was simple. However, for VHF contacts where there is a significant score already for the distance involved it is planned to amend the rules for scoring VHF contacts.

3. The number of people who submitted logs claiming 'All Modes' and only logged contacts using SSB or FM

The Modes allowed in the rules are VOICE (SSB or FM), Morse (CW) (Manual) and DIGITAL (Computer) Mode.

The PHONE (Voice) only Modes are SSB, DSB, FM, PM or AM. That is the modulation is an audio signal derived in the first instance from a microphone.

The alternatives are either hand CW Mode, is one the operator simply turns the carrier on and off according to Morse code.

DIGITAL mode is one which uses a computer to control the transmitter and to decode the information to allow the operator to complete the contact.

All mode is any combination of the above modes.

Breakdown of Contacts by Call Area and Band - SHF/UHF/VHF BANDS

	100		6.7G		3.4G		2.4G		1.2G		70cm	70cm	2m	2m	6m	6m
	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
VK1	0	0	0	0	0	0	0	0	0	0	39	7	51	10	30	5
	0	0	0	0	0	0	0	0	0	0	123	14	157	18	26	4
VK2	0	0	0	0	0	0	0	0	586	36	2701	167	4969	303	1567	124
	0	0	0	0	0	0	0	0	383	27	3344	205	7518	456	2855	176
VK3	0	0	0	0	35	4	742	48	2472	201	6825	633	12116	1105	6492	495
	60	2	60	2	60	2	350	33	1994	201	3825	408	7077	827	3346	266
VK4	0	0	0	0	0	0	0	0	369	39	1618	225	3417	427	564	107
	0	0	0	0	0	0	0	0	213	47	523	124	933	182	488	90
VK5	22	1	22	1	22	4	240	16	1392	57	2893	144	4307	210	786	44
	110	5	90	4	60	6	70	3	353	50	2166	313	2267	332	273	59
VK6	0	0	0	0	0	0	0	0	0	0	59	25	274	76	0	0
	0	0	0	0	0	0	0	0	0	0	157	31	322	83	30	12
VK7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0
VK8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	6	3	0	0
P2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	22	1	22	1	57	8	962	58	4819	333	14345	1201	25154	2131	9439	775
2011	184	12	154	8	284	22	474	41	3193	319	9511	962	17902	1841	6882	564

Numbers in Bold are for 2012 and other details are from 2011

Club Stations

Club Stations were generally well operated and made some very big scores as a result of their combined efforts. Well done!! The absence of a number of VK2 club Stations was noted.

The logging issue from last year was largely resolved.

Low Power Contest

A suggestion was made by a few stations that a QRP category could be allowed. The suggestion was that only a station that can be carried in a backpack should be allowed for the operation of the station. There was only two logs entered indicating that all operation was on low power. Both are acknowledged on their certificate.

It is interesting to note, the scores produced by some of

the Foundation licensees who submitted a log, does indicate that plenty of contacts were made on the restricted lower power permitted by their LCD.

The Future

Now it is over to you. There are always ways to improve anything, but scrapping something because it does not suit you is not possible, but if benefits are shown to be available, further changes can also be made to the contest to better serve the amateur community. But changes to force the majority to follow what suits a small minority is definitely not a good idea.

If you have any contribution to these topics, the Rules for this contest are available at the WIA web site at <http://www.wia.org.au/members/contests/johnmoyle/>

which already contains my contact information and please feel free to contact me with your submission for further consideration.

Well done to all of those stations that participated in the contest and well done those who bothered to submit a log. It is hoped that the number of logs to be submitted next year will continue the recent trend of increased log numbers.

I wish to thank those who did send in photographs of their equipment set-up and personnel involved for inclusion in the AR magazine. These have been submitted to AR along with this report so please give Peter Freeman via e-mail at editor@wia.org.au anything else you have for later use for the magazine.



Breakdown of Contacts by Call Area and Band - HF BANDS

	10m	10m	15m	15m	20m	20m	40m	40m	80m	80m	160m	160m
	P	C	P	C	P	C	P	C	P	C	P	C
VK1	0	0	0	0	56	27	501	306	42	21	0	0
	22	11	16	8	42	21	698	349	42	21	0	0
VK2	55	31	71	38	1494	771	5096	3477	1957	1038	24	12
	2	1	78	26	938	456	5905	3080	2563	1308	0	0
VK3	12	8	12	8	1460	738	4099	2098	1904	956	12	6
	37	19	34	18	830	422	4223	2135	1544	787	0	0
VK4	42	22	50	27	2553	1097	3879	2144	1622	864	8	4
	54	22	91	47	2175	1086	3863	2021	1346	698	56	22
VK5	8	4	30	15	1300	665	2996	1653	690	471	0	0
	49	25	66	33	882	453	2228	1183	490	256	65	33
VK6	2	1	2	1	638	321	390	201	118	62	0	0
	2	1	82	41	1214	609	703	352	573	287	0	0
VK7	0	0	3	2	77	39	115	61	159	81	0	0
	0	0	2	1	159	84	787	501	274	175	0	0
VK8			2	462	234	20	10	0	0	0	0	0
	36	18	38	19	402	201	78	39	18	9	0	0
P2	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
ZL	0	0	0	0	124	68	106	56	47	25	0	0
	0	0	3	2	77	42	167	86	158	80	0	0
2012	119	66	170	92	8164	3961	18194	10006	6739	3518	24	22
2011	202	97	410	195	6719	3374	18652	9746	7082	3621	121	55

Numbers in Bold are for 2012 and other details are from 2011

Participate

July 14 Maryborough Electronics and Radio Group Inc Hamfest

July 21 Gippsland Gate Radio & Electronics Club Annual Hamfest Sale

PRM80 six metre conversion – an unexpected fruit

Matt Bilton VK3VS/VK3SMB

In my previous article, I showed how to convert an E band PRM80 radio to six metres (1), using nothing more than basic RF principals and some 'outside the box' thinking to get the PLL down to 50 MHz. This all worked very well apart from a couple of side effects.

If you did not see the other article, these side effects were microprocessor noise on parts of the band and the lack of a repeater defeat option due to the hacked reference stepping.

While converting another E band PRM80 to six metres, I got thinking about the firmware and how the 'words' are added to the PLL to not allow it to go below 58 MHz. So silly me started trawling through lines of code and the datasheet for the PLL IC to find a pattern that looked familiar. I found it.

The Changes

I have on my website (2) modified firmware for the PRM8025 and PRM8030 single mode radios and for the PRM8025 and PRM8030 dual mode radios. It may work on the PRM8038 but this has not been tested. This firmware has the following changes:

1. E band has been changed to give a starting point of 48 MHz, originally 68 MHz
2. B band has been changed to give a starting point of 108 MHz, originally 132 MHz.
3. U band has been changed to start at 220 MHz, originally 440 MHz, and
4. W4 band has been changed to start at 24 MHz, originally 494 MHz

To go with the firmware, also on my website (3) is a modified version of the FPP to match the firmware changes. For those who do not know, FPP is the Field Personality Programmer software from Philips. The changes are to match the firmware with some extras thrown in as well. These are:

1. The frequencies can be directly entered as follows:



Photo 1: A screenshot of part of the FPP software.

- a. E band now allows frequencies between 48 MHz and 78 MHz. (Covers both the four and six metre bands).
 - b. B band now allows frequencies between 108 MHz and 140 MHz. Looking after the aircraft buffs.
 - c. U band now allows frequencies between 220 MHz and 250 MHz to line up with my understanding of the American 1.25 metre band, and
 - d. W4 now allows the frequencies between 24 MHz and 58 MHz to cover the 10 m and 6 m band.
2. There has been some band edge changes:
 - a. A9 band used to have a lower edge of 146 MHz. Annoying. This has been extended (or dropped) to 140 MHz to line up with the new B band described above.
 - b. TU band used to stop at 470 MHz at the top level of the band. It has been extended to 480 MHz for UHF CB (This gives us a 70 cm and UHF CB radio in one go....). (Ed.: Not recommended – see "Comment" in AR September 2011.)
 3. All the bands for the portable versions (the PRP80) have been extended to match the mobile. The portables will not cover these bands completely, but it has allowed a 70 cm band to be programmed.
 3. There are two hidden bands in the firmware that are not accessible by the FPP. I have enabled these bands. They are K1 (174-210 MHz) and K2 (200-220 MHz), in both a local and remote variant. I do not know what we can use them for but they have been turned on.
 4. The band names in the front screen of the FPP program have been changed to something a little more user friendly. To most, E0 band does not mean much, but '6 and 4 m version' does. Refer Photo 2 on next page.

See the screenshot in Photo 1 for a sample of the software.

How to install the firmware

1. Remove the EPROM from the radio. Note there are 32 holes and only 28 pins, and watch the orientation.
2. Erase the EPROM contents with a UV light.
3. Download and write the modified firmware to the EPROM.
4. Install the EPROM back into the radio.
5. Write a known good configuration to the radio.

It is possible, if your radio had version two or lower of the Philips firmware in it, that it will make a beep-boop sound indicating that the software is corrupt. In most cases this can be cleared by loading a new job file to the radio, but not always. If this does not work, you will have to have a look on the internet for a program called FP (Factory Programmer) and do a 're-format' of the radio's software.

Using FPP (the modified version)

The amount of options in the FPP software is well beyond the space available in a magazine, so I will just give these pointers:

- After loading FPP, press F10 to go into setup and set the correct drive and COM port you will be using.
- F1 does work and will give very good help depending where the cursor is on the screen.
- Page Up and Down give access to more screens of options.
- If you do something wrong it will tell you.
- In the main menu (accessed by pressing ESC from any option screen), F2 reads the radio or file and F4 writes to it.
- Use it in REAL DOS not a DOS window in Windows.

If you use the Modified FPP program with standard firmware it will read and write to a radio, but if you are using one of the modified bands weird things will happen.

Using FPP with Windows XP

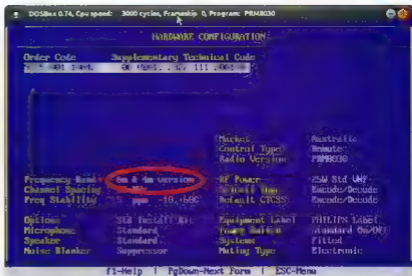


Photo 2: Showing the re-naming of the bands to a human-friendly name.

In the Yahoo PRM80 group (4), there are many posts about getting the FPP software to work under Windows XP. It will not work as it is an old DOS program trying to directly access the serial ports. Windows XP will not allow it. To solve this problem, there is an emulator program I have been using for quite some time that emulates an old DOS computer and runs under Windows XP. Please see my website (5) for download details and installation instructions. This will also work with other old DOS software that needs access to COM or LPT ports. It also works with Linux – that is how I am using it.

The earlier side effects

Both side effects have been fixed by using this firmware. The repeater defeat button now works as the correct codes are loaded into both RX and TX. The microprocessor noise I was getting across the band has disappeared. I can only surmise that using the 8 MHz rock and already having a 12 MHz rock on the control board were mixing and causing all sorts of havoc. (We get 8, 12, 4 and 20 MHz and multiples of them).

Already done the conversion?

If you have already done the conversion from my previous article, all you need to do is remove the 8 MHz

crystal and replace it with the original 10 MHz one and change the firmware. The RF stages are all the same.

Summary

Between the firmware and the FPP, we now have a radio that is capable of controlling the PLL from 24 MHz to 78 MHz, 108 MHz to 250 MHz and 400 MHz to 500 MHz, of course hardware permitting. There is another version of the firmware I have written (again on my website (2)) with the intention of making a 23 cm version of the PRM80. Basically it has been given a step of 8.333 kHz and an IF of 7.133 MHz in the 70 cm band. Triple both of these and you have a 25 kHz step in the 23 cm band with a 21.4 MHz IF. Stay tuned for this one. Have fun.

References

1. Matt Bilston VK3VS/VK3SMB "Philips PRM80 six metre conversion" *Amateur Radio* July 2011 page 43
2. My website www.vk3smb.com/projects/firmware.shtml
3. My website www.vk3smb.com/rss/simoco.shtml
4. Yahoo groups <http://groups.yahoo.com/group/PRM80-Series/>
5. My website www.vk3smb.com/rss

Illawarra Amateur Radio Society crystal set building competition

Rob McKnight VK2MT

For the past several months, the Illawarra Amateur Radio Society (IARS) has been running a competition to build the best crystal set. Rules were basic, with performance, design and originality being the main criteria with their being two sections to enter, one for IARS members and one for non-IARS members.

First prizes for each section was a two metre handheld, with both second and third prizes also available.

At the November club meeting, the many crystal sets were displayed and admired, with judges Max VK2ARZ and Paul VK2FE having the unenviable task of deciding the winners.



Photo 1: VK2ARZ, John VK2AAL and VK2FE with John's winning breadboard set.

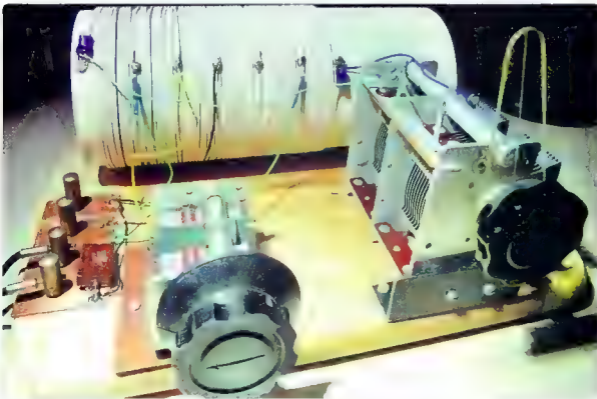


Photo 2: VK2AAL's breadboard crystal set.

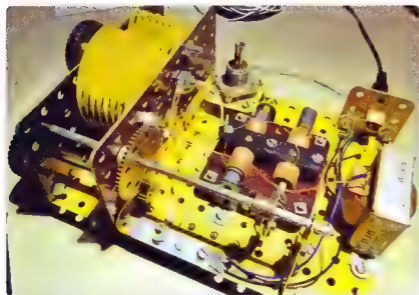


Photo 3: VK2BEU's Meccano crystal set.

One set was built from Meccano parts, including its variable capacitor, another hidden inside a beautifully crafted wooden box and another built on an actual breadboard that his wife hasn't missed, as yet!

The first prize winner for the non-IARS member was Peter VK2BEU, with John VK2AAL being the IARS member winner. Presentation of prizes will occur at the December Christmas meeting.

Congratulations and well done to all entrants for proving how a simple circuit can work so effectively.

An unlikely source of QRM for your HF or VHF station

Gerald Molenkamp VK3GJM

Some initial history:

Around 15 years ago, halogen down-lights became popular and the amount of light per lamp suited an extension we built on our existing house. While looking for lighting back then, we came across some industrial fittings that not only looked good, they had several variations of fitting one, two or three lamps each one on a gimbal, so directing light to needed areas optimised our lighting needs.

With the cost increase of electricity per kWh forecast over the next few years, I decided to do my bit to lower my carbon footprint. Did the research and decided to replace 14 x 35 watt halogen lamps with 14 x 6 W (cluster of 2 x 3 watt) LEDs with a warm colour temp of 3000 K.

Although the effective lumens per LED cluster was less than the single 35 watt lamp, the benefit of moving to LEDs is obvious - some facts on next page:

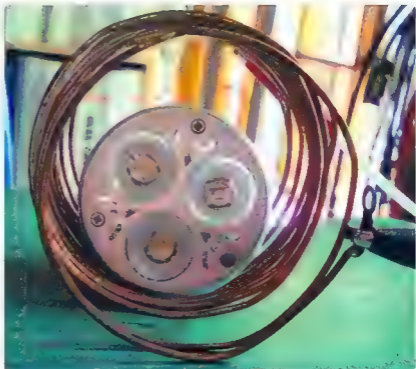


Photo 1: An unlikely source of QRM for your HF or VHF station.

1. 35 watt halogen lamps: 12 V

DC, current consumption is 2.98 A/lamp. 161 degrees C

- Old fashioned, every three years you need to replace one.
- Huge power consumption.
- Life is short due to high temp, MTBF typically 8 k hours.
- Inefficient per kWh v Lumens.
- Halogens radiate UVR, this can be harmful over time.
- Zero noise, perfect for HF station.
- Low cost, proven tried, tested.

2. 6 watt LED: 12 V DC, current consumption is 0.305 A/lamp. 32 degrees C

- New Cree and cluster LED technology.
- Huge reduction in power consumption, some as much as 90%.
- Longer life time, MTBF typically 50 k + hours.
- Efficient per watts v Lumens.
- Zero radiation.
- Can create noise via internal circuitry or external electronic transformer.
- High cost per device.
- Although LED technology is proven, proper mechanics and heat dissipation of the LED chip is still instrumental to long service life.

The above value (2) provides almost an order of 10 power consumption reduction. However it needs to be noted, the effective Lumens is also reduced by 12-20%.

By far the biggest shock was the heat generated by each halogen lamp compared to the LED. At room temperature the 35 watt Halogen was switched on, and the following was observed:

T0, temperature at the base = 19 degrees C

T1 = T0 + 30 seconds, temperature at the base = 36 degrees C

T2 = T1 + 30 seconds, temperature at the base = 66 degrees C

T3 = T2 + 5 minutes, temperature at the base = 149 degrees C

T4 = T3 + 7 minutes, temperature at the base = 161 degrees C

Wow, so 14 halogen lamps equate to 41.72 amps in total, that is 1677 BTU/hr, compared to 175 BTU/hr for all 14 LED down lights. I have not even looked at the amount of energy wasted as heat. Approximately 90% of the power consumed by an incandescent light bulb is emitted as heat, rather than as visible light.

The choice was obvious, I replaced all halogen lamps, and the total current consumption was reduced from 42 amps to 4.27 amps in total. All values exclude transformer loss.

It took a bit of getting used to, the reduction in lighting, but we felt better for it knowing we are helping the environment in a little way.

Now to the main reason in the first place for this article.

Some weeks later I found some me time to switch the HF radio on. I joined a regular sked on (Mondays) on 3655 kHz. After the sked I

changed band to 40 metres, and realised something seriously wrong.

I had a QRM noise level between 30 to 40+ signal strength, yes huge. I also observed a notable increase in S meter movement (background noise level) on VHF ranging from 5 to 7 signal strength, but not enough to worry about, it didn't break the squealch.

I put it down to changed weather conditions, rain and the effect of power line noise due to good rains and the colder period in Melbourne. HF was mainly switched on at night, and this is when the noise was at its greatest. I decided to start looking for the noise source. It took a late night work activity where I was still working and listening to a local station on HF when, by chance, my son turned off the LED lights in the family room. Wow, the noise is gone! It was all about timing.

My first thought was of those new efficient LED down lights, it is the fault of the current limit switching arrangement within the MR16 fitting, noisy dirty things, cheap foreign junk!

I pulled one apart and did some spectrum and oscilloscope measurements while on the bench connected to a linear DC power supply. Although each could do a bit better with a low ESR capacitor fitted.

With HF running and a loop connected to the antenna socket I could not fault the one LED down light. Maybe I have a rogue LED? I proceeded to test the other 13, and still no luck. I could not recreate the 30+ signal strength noise level on 40 metres on the bench.

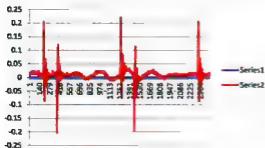


Figure 1: The oscilloscope plot prior to fitting a low ESR Tantalum.

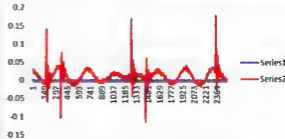


Figure 2: The oscilloscope plot after fitting a 10 μ F 16 V capacitor inside LED MR16 housing across the full wave bridge + and - on the DC side.

The vertical axis is peak to peak levels in volts, the horizontal values as sampled points.

The upper and lower spikes have reduced with a good quality low ESR capacitor fitted. This made no discernable difference in terms of the very localised noise generated by the lamp's support circuitry.

A quick spectral test using a loop connected to the spectrum analyser.

A spectrum sweep from 1 to 100 MHz.

The trace above in Figure 1 is not an issue, the noise is so local, these LEDs do not radiate.

A spectrum analyser plot with LED MR16 lamp switched off, inside the loop.

I decided to put the old 35 watt halogen lamps back in the MR16 housing. Again I could not re-create the noise. I removed the halogen lamps again and inserted the LEDs, up it came, 30+ signal strength noise level, definitely man made QRM. These lights are about six metres from the HF radio and some 10 metres from the antenna, which is sitting above a flat clip lock colour bond roof; what is going on?

As it turned out, the original installation of the down lights 15 years ago incorporated what is called an "electronic transformer", the inductive type. After doing a Google search, I managed to download the specifications of the device and, in black and white, it stated not suitable for LEDs. The penny dropped, the LEDs are not an inductive load (filament). Furthermore the device was specified for loads between 35 to 105 watts total. Given that I am only running two LEDs from a single device and it needs an inductive load between 35 to 105 watts, (2 x LED = 19 watts) it is no wonder, the electronic transformer is not efficient and the very low load is the main reason the unit is emitting a wide range spectrum noise nearly blanketing HF all the way to VHF (two metres).

I quickly replaced the newer

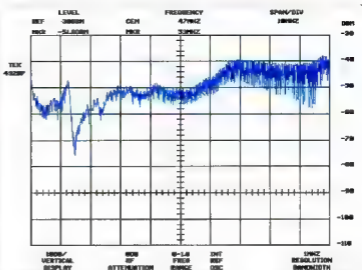


Figure 3: Quick spectral test using a loop connected to the spectrum analyser.

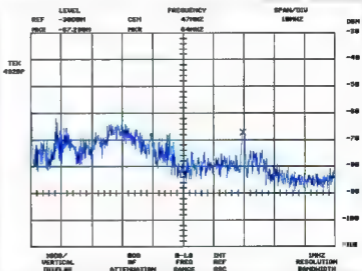


Figure 4: Spectrum analyser plot with LED MR16 lamp switched off, inside the loop.

technology electronic transformers with good old fashioned iron core transformers and the 30+ signal strength of noise on HF and VHF went away.

The point of the exercise is that new LED technology can provide substantial benefit in the longer term, but not to the detriment of completely wiping out a hobby.

Selecting LED lighting and the type of transformer is very important to ensure your QTH noise level is kept to an absolute

minimum. My advice for those who don't have access to test equipment, purchase a LED fitting and transformer first, power it up and place near your HF radio.

The results will be self-evident the moment you switch the lighting assembly on. Make sure you test under a number of load conditions as LED transformers can come in a variety of step down technologies.

A computer powered multimode transmitter - QRP from your computer's USB port

Peter Parker VK3YE

This project may appeal to those who want to learn more about teaming computers up with radios, digital modes or propagation by building a low power beacon.

Presented here is a small fixed-frequency HF transmitter that uses the computer as a power and modulation source. It is suitable for a wide-range of low power SSB, CW and digital mode tests. While the unit shown is double-sideband suppressed carrier, the fixed-frequency design can easily be modified to transmit SSB or a single CW or digital mode signal.

The circuit is also a good teaching project; containing an oscillator, mixer and amplifier it has all the building blocks necessary for much more complex equipment. Output power is approximately 20 milliwatts, sufficient to be heard hundreds of kilometres away at a quiet location.

Circuit description

The transmitter has three stages – a local oscillator, a balanced modulator and an RF power amplifier. Refer Figure 1. Strictly speaking only the first two are necessary but if you omit the amplifier your transmit range is considerably reduced.

The first stage is a crystal oscillator using a 2N2222, PN2222 or similar small-signal transistor. It uses common amateur band crystals available from Rockby Electronics and other suppliers. I chose 40 metres (7.160 MHz) because of the band's daytime propagation characteristics, but an 80 metre version (3.580 MHz) would be feasible with a change to the collector tuned circuit and output filter. Output of this stage is about five milliwatts – sufficient to drive the diode balanced modulator.

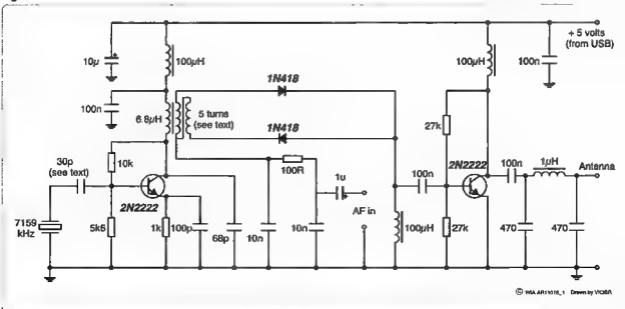
The 30 pF capacitor in series with the crystal was selected to

provide an oscillator output on 7160 kHz. 30 pF is not a common value but can be formed from 2 x 15 pF disc ceramic capacitors in parallel. If the exact frequency is not important this capacitor can be omitted; doing this lowers the frequency to approximately 7158 kHz. Conversely a smaller capacitor increases the frequency to approximately 7162 kHz. This is only critical if you wish to add an SSB filter – more later.

The trickiest part of the circuit is around the collector of the oscillator transistor. The output is tuned to 7 MHz through the 6.8 μ H coil (an RF choke) and the 68 pF capacitor to earth. Because the balanced modulator has a lower impedance than the transistor stage, four or five turns of very thin enamelled wire around the body of the RF choke provide the required step down.

This winding is rather special, comprising two wires not one.

Figure 1: The circuit.



These are twisted together (like you would make a balun) before being wrapped around the 6.8 μ H choke, as shown in Figure 2. The start of one winding is connected to the end of the other to form a tap. A good way to test this is with a continuity indicator or multimeter set to ohms. All wires should indicate a short-circuit – if you do not get continuity between all, you have shorted one of wires and left the other unconnected.

It is through the tap via the 100 ohm resistor that audio is applied from the computer's sound card output. This audio can be anything from live or recorded voice, audio tones (for CW), slow scan television or digital modes like PSK31 or WSPR. I will list suitable software for these modes later on.

The two free ends of the enamelled wire secondary go to two diodes which form the balanced modulator. This is really just a mixer stage; the audio from the computer is combined with the 7 MHz from the crystal oscillator to produce a signal at 7 MHz that is modulated with audio. The other thing about the balanced modulator is that the carrier is nulled out (or nearly so) so all you have are the two sidebands that carry the signal's intelligibility. Using the bandscope on SDRadio about 25-30 dB carrier suppression was achieved with no special effort

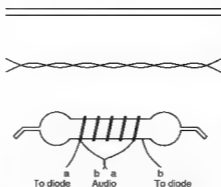


Figure 2

Figure 2: Winding the coil.

at balancing – acceptable for a low power transmitter.

One could connect an antenna straight to the output of the balanced modulator. However, output would be low – one milliwatt or so. Nevertheless if hooked up to a good 7 MHz antenna such as a dipole you will get about a one km voice range on a mobile or portable receiver over open parkland. Water is even better; the author's maximum range with one milliwatt has been 12 kilometres to a quiet receiving site.

Otherwise, the balanced modulator output is fed to an RF amplifier stage, which puts out

1. Cut two lengths of very thin enamel coated copper wire to approximately 6-7 cm long

2. Twist lengths together – either by hand or in a drill bit.

3. Wrap around RF choke. Solder the start of one winding to the end of the other to form a centre-tap.

© AR1015.2 Design by VK5BR

about 20 milliwatts. More power from it would be possible, but for beacon or test use it is better to underpower stages so they can operate at 100% duty cycle without overheating.

Finally there is a simple low pass filter, again using an RF choke, to attenuate harmonics. A multi-section filter would result in even lower harmonic emissions but is unnecessary for such a low power transmitter.

Construction and testing

The transmitter was built on the copper side of a piece of printed circuit board material, dead bug style. Construction started with the oscillator and once that was working moved to the balanced modulator and RF amplifier.

For peak RF output you may wish to use a 3 – 30 pF trimmer capacitor in parallel with (say) a 56 pF fixed capacitor (instead of the 68 pF fixed) at the oscillator, but the author did not find this necessary.

A plastic box houses the rig. Flying leads provide connections to the antenna, USB (5 volts power only) and headphone output on the computer. To avoid having to solder a USB plug, a factory-made USB lead was cut up for the USB power connection. Helpfully its leads were correctly colour coded – black for



Photo 1: A photo of the completed USB powered transmitter.



Photo 2: The USB powered transmitter – close up of the housing.

ground and red for positive – but it is worth checking with a multimeter. The other leads were cut short and ignored. Polarity is most important as is avoiding shorts – you do not want this project to endanger your computer – so triple check everything before connecting.

Testing requires an SSB receiver, an audio signal source (either from the computer or an audio amplifier) and some means of measuring or at least indicating RF output. The oscillator's output should be within one or two kHz of 7160 kHz – write this frequency down.

If using the computer as the signal source, record a test beacon message. This could be tones (select 1 kHz sine wave) and some voice. For low power beacon work a CW ident is handy and can easily be produced in your audio editor. Use a tone duration of 0.1 seconds for a dot, 0.3 seconds for a dash and 0.5 seconds for a silence between letters. Add an optional voice ID and a carrier to make the sound file

up to (say) 30 seconds. Plug some headphones into the sound card's audio output socket to demonstrate that it is working.

Playing this through the transmitter should result in a signal on the receiver. Because this is a double sideband rig there will

actually be two signals, forming mirror images about the (nearly) suppressed carrier. Assuming this is on 7160 kHz, there should be strong tones on 7159 and 7161 kHz (when a tone is being transmitted). There will be some carrier audible but it should be much weaker than either of the sidebands (if not there is a problem with the balanced modulator). You know the receiver is on frequency when the tone is the same pitch whether upper or lower sideband is selected. Voice should also be plainly audible on both sidebands without retuning.

Experiment with the soundcard's output level (with volume controls on the computer's audio manager software) and note the effect that varying it has on transmitted signal strength. There will be a point where increasing the level does not make the signal stronger. Note this position and back off a little from there. This was about half setting on my computer, but a lower level seemed better for digital modes.

Because of the transmitter's low power, conventional SWR meters will not indicate. Instead verify that the antenna is matched on 40 metres with a higher power transceiver. If you intend to use this transmitter portable or anywhere there is no permanent antenna, two ten metre lengths of wire (antenna



Photo 3: The internals of the USB powered transmitter.

wire and radial) will present a good match without an antenna coupling unit if connected to the rig's antenna and ground.

Software

Depending on desired transmitting modes, the following software is recommended:

- Audacity: Sound editing and recording software. With tone generator function. Useful for producing beacon 'scripts' – that is, continuous carrier, Morse ID, voice message. Can save output in wav format.
- Windows Media Player. Standard on most computers, this allows you to replay audio recordings. The loop repeat function is particularly useful for beacon use.
- WSPR 2.0 by K1JT for WSPR.
- Digipan for PSK31.
- MMSSTV for slow-scan TV.
- SDRadio. Useful for experimenting with software defined radios, audio filtering and monitoring transmitter output (especially carrier suppression).

Note that some digital modes, for example, PSK31 and WSPR, use their own frequencies. You will have very little if any success if you do not adhere to them. Crystals for WSPR frequencies are cheaply available from Expanded Spectrum Systems www.expandedspectrumsystems.com

Results

This rig has been used as a CW and voice beacon. On its first day of operation reports were received from near Geelong, Canberra and Sydney. In all cases the signal was weak and only the Morse could be consistently deciphered. One of the longest distances was to Mike VK2IG (500 km away) who recorded the transmission at http://www.youtube.com/watch?v=M_lCQ7PdglU

A local test with PSK31 was also successful, while much longer

distances were spanned with a similar transmitter operated on WSPR. SSTV also worked but there was significant 'ghosting' of the picture for reasons not yet determined. Audio levels are quite important with digital modes and too high a drive will distort the signal.

Further thoughts

Several modifications and additions could improve this project further:

Other bands

If bands other than 40 metres appeal it should be possible to modify this circuit. Crystals for 1.8432, 3.580 and 14.318 MHz are sometimes found on computer boards and could be used in a design such as this with appropriate modifications to the oscillator tuned circuit and output filter. A 3.58 or 7.2 MHz ceramic resonator would provide frequency agility at some expense to stability. Or crystal oscillator modules, also on old computer boards, might allow operation on some higher bands (some are for 14.318 or around 28.6 MHz and the latter in particular would be interesting for propagation testing as sunspot numbers improve).

More power

An extra stage could increase coverage but still not overload the USB's power capabilities. With a similar 10 MHz WSPR rig, the author has used a BD139 to increase output power to the 200 milliwatt level with a five volt supply. Again this is well below the transistor's ratings so a heatsink is not needed.

SSB

Currently the rig is double sideband, for simplicity and ease of adjustment. However if you were to order three or four more crystals than needed you could use them as a ladder filter to produce an SSB signal. This increases efficiency and reduces bandwidth but you will need some more RF amplifier stages due to the filter's introduced loss.

As an experiment the author tried a lashed-up filter on the prototype. The connection between the π network and the 2N2222 amplifier stage was broken and a crystal filter wired between this stage and a short antenna wire. The filter comprised just two 7.159 MHz crystals with a 68 pF capacitor to ground at their junction. The 30 pF crystal series capacitor was lessened to 10 pF to raise the oscillator's frequency to about 7162 kHz (required for a lower sideband signal as the filter's bandpass is around 7160 kHz).

Despite poor impedance matching the upper sideband was appreciably weaker than the lower sideband, proving that even a very simple crystal filter could produce acceptable SSB for this purpose. The crystal filter has a loss and the output from it is less than that fed to it. Hence you will likely need two or three stages to lift power to the desired 20 – 200 mW output range.

Make a transceiver

Wouldn't keyboard chat over several kilometres between two laptops be fun? This project contains the makings of such a communications link. A double sideband transceiver like this contains similar parts to a direct conversion receiver that produces audio that WSPR or PSK31 software will decode. One or two extra stages and some fancy switching will get you on your way.

Conclusion

While not exactly a 'contact getter', a 20 milliwatt rig such as this has many uses for equipment testing, beacons and local links. It is also a useful stepping stone for those wishing to play with digital modes with homebrew equipment or do QRP beacon tests.

Special Event stations for the London 2012 Olympic and Paralympic Games

John Warburton G4IRN - Publicity Officer, Project Echo

Some special event call-signs will be activated to celebrate the London 2012 Olympic and Paralympic Games: 2O12L (Two Oscar One Two Lima) from London, England and 2O12W from Barry, Wales. The Radio Society of Great Britain has been granted the 'Inspire mark' for these stations by the London 2012 Inspire programme.

The London station, 2O12L will be active through the duration of the Games, located at the historic Eltham Palace, south-east London on 160 m to 2 m, all modes. More information on the web site www.2O12L.com or contact the

Press Officer, Mr John Warburton G4IRN at press@2o12l.com

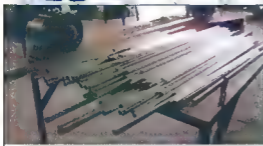
The Welsh station 2O12W will also be active on all bands from 160 m to 23 cm and all modes including SSTV and satellite from Whitmore Bay, Barry Island, Vale of Glamorgan, Wales. More information on web site www.2O12W.com or contact the station manager Glyn Jones GW0ANA, at glyn@dxs.talktalk.net

Amateur radio operators everywhere will be able to share in the Olympic experience by making contact with the stations and to exchange greetings messages with

visitors and Games participants who visit the station - the team aim to make contact with as many of the Games participating countries as possible. Special QSL cards will be available to stations contacted.

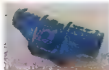
The project aims to leave a lasting legacy by encouraging visitors to learn more about radio communications and the social, career and recreational benefits that it brings. Of course, visiting hams will be made very welcome at the stations. Both 2O12L and 2O12W go on the air on 27th July 2012.

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ALARA

Margaret Blight VK3FMAB – Publicity Officer

Earlier this year ALARA learnt of an expedition planned by members of Thane Amateur Radio Association (TARA) and the Amateur Radio Society of India (ARSI). They intended to activate Bet Shankhodhar Island (aka Bet Dwarka) in the Gulf of Kutch between 16th and 23rd March, 2012. This island, IOTA AS-175, had not been activated before.

Bet Dwarka is an important religious destination for followers of the Hindu faith. It has the palace where Shri Krishna lived with his wife Rukmini. Ancient Indian scriptures have described how the ocean rose to cover the city of Dwarka. A whole city had been unearthed underwater a few years ago and is supposedly the ancient Dwarka.

The advance party, comprising Saria VU2SWS, Mickey VU2IZO and Nandu VU2NKS, left on the afternoon of 13th March from Mumbai to Okha. Their ETA at the port of Okha was at 1600 local on Wednesday, 14th and they were expected to reach the island QTH by 1800. They hoped that three stations would be set up by the 17th by which time the other team members would have arrived. The full team was to operate until 23rd March. There would be six operators and operations were planned on all modes, CW, SSB and RTTY.

Saria VU2SWS reports on the expedition

It's been a little more than a week since I got back from Bet Dwarka Island in the state of Gujarat. I would definitely say that this YL lead expedition was a major success. We made 10088 QSOs! We bombarded the band during every opening in the bands on 10-80 metres and operated on SSB, digital and CW modes.

For the last three years I had discussed this operation with many amateurs staying close to the island, but I found that not too many shared my enthusiasm to work from a new IOTA.

Finally in December of 2011, I decided that I should take the lead and get this operation going. My OM's friends in Mumbai supported the idea and we put together a team of six people. The application was made to the government and we finally got the permission around the end of November.

In the interim period, the group met every week to discuss the various aspects of the expedition. A mock exercise was held near a creek close by and the antennas were tested and a good radial system was made. Five radial plates were manufactured locally. Work was divided amongst the group members from Mumbai. One group planned the technical aspect of the operation. I and another OM tackled the authorities, collected all the equipment in one place, organized the packing and transportation, and the publicity and sponsorship applications. The youngest member of our group, Deepak, designed and handled the business of the website, which was launched a week before the event began. I of course, used to breathe down their necks through the telephone and emails to make sure that every little detail was looked into. I had nightmares imagining how things could go wrong if we forgot even a small thing like connectors, or fuses!

Two members of the group and I reached the island on the 14th as an advance party to set up the



Photo 1: Saria VU2SWS at one of the operating positions on Bet Dwarka island.

stations. We travelled by train to the city of Okha. From there it was a boat ride to the island and a ride on colourful rickshaws to the spot. The campsite had bare living facilities, but toilets were provided for. The huts were just sack cloth put over bamboo. There was electricity and a kitchen with staff and who provided the food. The camp was very close to the sea but elevated. It was a site perfectly suited for amateur radio activity.

By the time we unpacked there was no light, so we rested and retired for the evening. Next morning at 6 am we started to work on setting up antennas. First one installed was the Buckmaster seven band OCF antenna at a height of 11 metres on a Spider pole. Wire verticals for 40 metres and 20 metres and a vertical dipole for 10 metres were installed on a spider pole and bamboo. With the help of an antenna analyser, all the antennas were perfectly tuned for their intended band. With a tuner the 40 metre antenna could work on 15 metres, the 10 metre antenna could work on 12 metres and the 20 metre antenna could work on 17 metres. By the evening of the 15th, two stations were on air! Three shacks were set up. Shack 1 had the TS590 with all accessories.

Shack 2 had the K3 with all the accessories. Shack 3 had an Icom IC-718. All the stations had the capability to operate on SSB, CW and RTTY. First to go on air with RTTY was OM Nandu VU2NKS. There was a huge pileup on all modes. I was on SSB mode working the European pandemonium till the wee hours of the morning before going QRT for the first day.

The other members of the group started to arrive and with their help, an 80 metre inverted L, a multiband half square antenna for 20 metres and up, and a 17 metre wire vertical were installed. On the 16th, all three stations were on air covering all the modes and all the bands from 10 to 80, working every opening. I was mostly on SSB mode and sporadically on RTTY. VU2NXM, VU2CDP and VU2LX were primarily on CW and worked as standby operators on SSB. VU2NKS was totally on RTTY. The 20 metre antenna was moved to stand in the water and the Ameritron AL-80B linear amplifier was connected to the SSB station. The result was the west coast of NA coming out strong with a 55 report. The shack was also moved closer to the antenna. I remember working Elizabeth VE7YL, Minnie VE3DBQ and Christa DJ1TE and perhaps Nori 7K3EOP. There were other European YLs that I worked but cannot remember their callsigns.

Though online logging was provided for in the website, it was not possible to upload the logs as the internet connectivity on the island was poor and sporadic.

The weather on the island was perfect with a cool breeze in the evening and night. All the team members worked in perfect harmony with each other. A total of 10,088 QSOs were made. There was the usual onslaught from Europe, but the team members managed it very well and the QSO rate was steadily maintained on all the modes.

On the evening of the 23rd the dismantling of antennas began. The final antenna was dismantled in the early hours of the 24th. By 8 am everything was packed and the team was ready to leave. We reached Okha station by 11 am, departing at 12 noon for Mumbai. We were all very happy to have achieved what we set out to do, namely activate a new island. On reaching home I found an email from the Island Radio Expedition Foundation (IREF) agreeing to a sponsorship of US\$500! That was good news. My inbox was also full of emails of appreciation from amateurs all around the world. I really felt proud of my team. I feel good about myself that all my efforts have borne fruit.

The QSL cards are being printed and soon that will be a massive task to do as we had a great response to the online logging system. Methinks for the next two months I am going to be very, very busy. But it will be a happy kind of busy. I hope all of you have visited the site www.dxccoffee.com/at2dwr There are many pictures there.

Congratulations to Sarla and the team. What a great effort! After such

detailed planning and enthusiastic support they certainly deserved the success they achieved. We hope to have further news about our International Women Operators following the YL International Meet in Adelaide.

ALARA VK3 news

On Saturday 31st March, VK3 ALARA members met at Gisborne at the home of Pam VK3NK and her OM Graeme VK3NE for a BBQ lunch. The weather was warm, and mild and the twenty or so people who attended relaxed and enjoyed catching up with each other while sampling the amazing range of salads available. We were later invited indoors to enjoy a musical interlude with Peter VK3RV providing a skilful piano accompaniment to Pam on the Harp and Susan VK3UMM contributing the songs.

After the entertainment we all took coffee and sweets on the veranda and time simply passed by. Pam and Graeme are such welcoming hosts it was truly difficult to leave them for the return journey.



Photo 2: ALARA members at the QTH of Pam VK3NK and Graeme VK3NE.



Plan ahead

23 - 24 June

Winter VHF-UHF Field Day

The Winter VHF-UHF Field Day will be held over the weekend of June 23/24. For full details please refer to the contest web page:

<http://www.wia.org.au/members/contests/vnfhf/>

Confessions of a pirate

Eric Jamieson VK5LP

First, let me go back a bit into history. I was obviously born with a "valve in my hand" because my interest in radio really commenced around the age of eight years! Despite being told to refrain I could not leave the house radio to itself - at every opportunity I fiddled with the three dials that this 1923 battery operated radio boasted, at times finishing with them hopelessly out of tune. Exasperated, my father bought me a book dealing with the fundamentals of radio. It was two inches thick, its appearance was quite intimidating, so it became known as the "tome" and sat on the desk in my bedroom where I did my school homework.

A shortwave listener

At ten years I built a crystal set. Being the Great Depression of the 1930s I didn't receive much pocket money so it was constructed from anything I could find. The case was made from pieces of a kerosene tin box, the coil wound on a jam jar, the coil tapping's semicircular slider was made from brass screw heads and my pocket money bought the headphones and the galena crystal detector. It worked quite well for a year or so until it was put aside when Dad bought me a three valve regenerative battery set (we had no power until 1950) for 17/6 (\$1.75).

Information from the tome helped me to convert this to a shortwave radio using plug-in coils covering from 500 kHz to 20 MHz, but I found smooth regeneration very difficult to obtain at the higher frequencies. Anyway, A415 triodes were never intended to operate at such high frequencies. So commenced my shortwave listening days. It was amazing what could be heard on an aerial 100 feet long and 40 feet high in a location with absolutely no noise (no power lines)

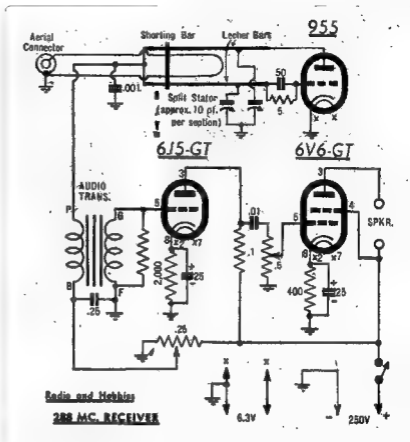


Figure 1: The 288 MHz receiver, from *The Australian Shortwave Handbook*, 1950 edition.

and a noise floor level so low that it had to be heard to be appreciated, and would be the unachievable dream of virtually everyone today.

In 1942 at age 18 I joined the RAAF as a wireless maintenance mechanic and served four years learning all I could about wireless, as it was then called. My introduction to VHF came with repairing SCR522A VHF radios in Kittyhawk fighter aircraft, despite having received no training to do so! In other words you learnt on the job! These units operated on four selected frequencies in the range of 100 to 150 MHz.

In 1947 I set out to procure my amateur licence but was so

busy repairing the district's radios that I put such aspirations aside until later. It was in the early 1950s when I made my first foray into amateur radio, with a mate and I constructing one metre (288 MHz) gear, a modulated oscillator for transmitting (a pair of 7193s) and a super-regenerative receiver. With an output of about four watts we covered the ten kilometres between us with ease using three element beams consisting of a folded dipole, director and reflector. We could not work similar stations in Adelaide due to the hilly terrain. In any case we had no desire to widely advertise our clandestine operations!

The one metre operations

To do so we would need 7193, 955, 6J5, 6V6GT and 6X5GT valves and a meter, which could all be obtained cheaply from the Waltham Trading Co. in Adelaide, a company which traded in surplus war equipment. Anything not found

Our local engineering business was able to bend up the required number of U shaped metal chassis and the ends were filled in with planed wood about 10 mm thick, which provided a rigid chassis. The transmitters, receivers and power supplies were each mounted on a separate chassis, the construction being fairly straight forward. We thought we had gone past the most difficult part but we soon learnt just how hard it was to operate such equipment on 288 MHz.

frequency we were transmitting but we knew there was some output as indicated by a torch globe with a pick-up loop. An unexpected bonus was that each receiver could actually hear the companion transmitter. That was a start! But neither receiver could hear the other transmitter! So, what next? Did we shift the frequency of the transmitters to match the receivers or vice versa? We decided on the former course which eventually had all units on the same frequency, but what frequency? At this point we decided we needed to be fairly close to 288 MHz where no doubt John Moyle would have had the units operating best. After much adjusting of the shorting strip on the transmitters we had the plate and grid currents similar to what had been recommended. We did note that it was very easy to have a degree of frequency modulation but also noted that the super-regenerative receivers seemed to handle that mode without too much trouble.

We were at a total loss to know what to do next in regard to establishing the correct frequency. We knew we were plating but still thought we should at least be operating in the 288 MHz band. Finally, we decided to build an absorption wave meter and take it to Adelaide and have it calibrated. On returning we found our transmitters were both around 290 MHz so we hadn't done too badly by following John Moyle's instructions closely. A small adjustment to the shorting strip on the lecher lines soon had both transmitters on 288 MHz or close to it. There seemed to be a reasonable output as the globe glowed brightly when placed near the lecher lines.

One thing we did note was that mechanical rigidity was essential to avoid a shift in frequency. Moving the transmitter around on the bench could shift the frequency. Despite the chassis being strongly made we eventually had to add triangular brackets behind each front panel so

288 MC. TRANSMITTER

that whatever adjustments we made would stay where we wanted them. They were frustrating times. I am sure that less determined people would have given up long ago and gone on a holiday!

Now it was time to turn our attention to the receivers or "rush boxes" as they were colloquially called, due to the loud hissing they made in the absence of a signal. As they were already working the most important thing was to get the aerial coupling correct. There is an art in getting the aerial coupling right. Too much coupling appeared to take the receiver out of its super-regenerative state and too little resulted in weak signals. So too with the regeneration control – once you had it right then leave it alone!

The three element antennas were constructed from aluminium and were a proportionally reduced version of a 144 MHz model as per the ARRL Handbook. They seemed

to work OK as there was a null in the signal when side on. They were mounted about six metres high.

It was with some sense of achievement as I watched David head for his home with his precious cargo. I erected my antenna and on the appointed sked time there was David calling me but barely in a super-regenerative state. A small adjustment to the receiver tuning and the regeneration control gave a much stronger signal with little hiss. After each had adjusted our antenna directions for best results we found that we had very strong signals with no hiss. At last, we could communicate!

For several months we maintained almost nightly contacts after which it was decided that whoever was able would call at 2000 and again at 2115 if a contact were not made. This system worked well for about five years until David and his parents moved

to Queensland. In the meantime though, each of us had gained a better understanding of VHF from the practical experience of our construction work and from the articles appearing in Radio and Hobbies magazine. This was with a view to obtaining our amateur licence.

Through the good years of solar Cycle 19 (1956-60) I did much listening on 50 MHz using a Kingsley tuneable converter joined to an AR7 receiver and a modified Channel 2 TV antenna especially imported from Melbourne where television had already commenced. I logged many signals from Japan, USA, Mexico, New Zealand, New Guinea and from all over Australia. The VHF bug was really biting and I had to do something about it! I obtained my licence in 1961, but that is a story for another time!



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H. 02 6026 2260 M. 0417 546 695

E. sanders_01@bigpond.com

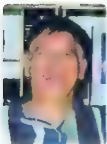
Peter VK2ATY

H. 0260402219

Peter VK2ZZA

H. 02 60256558 M. 0407 928464

<http://www.awarc.org>



Spotlight on SWLing

Robin L. Harwood VK7RH

✉ vk7rh@icqmail.com

Radio Canada International has reacted to savage budget cuts that were recently announced by axing all shortwave programs as from the 26th of this month. These cuts have also affected its parent organisation, the CBC, with the closure of several domestic studios and reductions in program output and the sacking of staff. The shortwave service uses senders in Sackville, New Brunswick as well as relays from senders in Japan, China and England. The Sackville site is also used by Japan, Korea and China to broadcast to the Americas and if Sackville indeed does cease, it will cause problems for these broadcasters reaching their audience in the Americas.

This indeed is sad for me because Radio Canada International was one of the friendliest stations when I started off listening to shortwave in the late 50's. I remember hearing my letter read out by Earle Fisher. RCI was easily heard because it was on the 49 meter band in our late afternoon hours before the arrival of television.

Also I recollect hearing it boom in around breakfast time as it was

broadcasting to Europe in the 25 and 31 metre bands. It sounded so different to the VOA and even the AFRTS. I can tell the difference between the American and Canadian accents and still find the latter much easier on the ears.

RCI did change over the years and its programming no longer connected with their audience. Canadian expatriates became extremely frustrated at not being able to hear it and get news from home. The focus seemed to be on encouraging immigrants to come to Canada. Therefore it is no surprise really that RCI lost their direction and audience.

On the 10th and 11th of May, Radio Netherlands said goodbye to the worldwide Dutch diaspora with a marathon 24 hour retrospective of history of the station. It was the final Dutch program transmitted from Hilversum on shortwave. The relay site in Bonaire will continue as will the Madagascar base but mainly for other broadcasters. The mission for the former Radio Netherlands is now focusing on human rights and

free speech worldwide and not on developments in Holland or indeed the European Union.

Last month, I mentioned Radio Australia was to commence transmissions using DRM. At the last minute technical difficulties caused this to be abandoned before any signals were sent. It is not known when or if they will appear. Interestingly Russia and the various nations that make up the CIS also decided to abandon DRM. This now leaves India and China as the major nations committed to broadcasting in DRM. Receivers with DRM are available but have yet to be produced in industrial quantities to become commercially viable. India does broadcast in DRM on shortwave but I have yet to hear any Chinese outlet domestically or on shortwave. Our Kiwi friends have been on DRM for some time but mainly as a feeder to small Pacific Island broadcasters. I find 7285 kHz provides a stronger signal than the companion AM signal around 1000.



GippsTech
2012

GippsTech 2012 will be held on the weekend of July 7 & 8, 2012, a date which is fast approaching.

It is time to register!

The program is coming together and lots of interesting presentations have been offered.

Topics include:

- Inaccuracies that will lead to a deficiency in your EME system performance or Why the other guy does better than you!
- A local cost GPS frequency reference for any radio
- DVSSB A PC based digital speech mode that rivals SSB above 30 MHz
- Converting ex Analogue TV equipment for use on the amateur bands
- 24 GHz propagation

- 78 GHz and Up!! An alternative, simple approach to millimetre wave Homebrewing
- Stepping in it
- 10 GHz ranscatter
- Cheap preamp for 10 GHz
- Microwave power amplifier construction
- DVB-T dongles for amateur SDR
- 5.7 GHz preamp
- Digital Interface for the IC-706.

Find further details and the registration form by following the links from the Eastern Zone ARC website: <http://www.vk3bez.org/>



AMSAT

David Giles VK5DG
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'I have just come across something most remarkable'

This month sees two major anniversaries. It has been 10 years this month since these words were sent to the AMSAT-BB – more on that below. It is also the 50th anniversary of OSCAR-II and a look at a new method of propulsion.

OSCAR-II

The successor to OSCAR-I was launched a mere six months later. OSCAR-II was very similar to OSCAR-I; they shared the same structure, the same function and were launched from the same type of rocket. OSCAR-II had design improvements after analysing the data received from OSCAR-I. OSCAR-II was launched on 2/6/1962 into a very low orbit and lasted only 18 days before re-entry. Three main improvements over OSCAR-I were made in the short time they had. By changing the surface coatings, the internal temperatures were lowered. OSCAR-I spent most of its time running at 50 degrees while OSCAR-II operated between 10 and 20 degrees. The second improvement was to the temperature sensing, so it retained its accuracy at lower battery voltages. The third improvement was lowering the transmitter output to 100 mW to improve battery life. OSCAR-I went silent before re-entry but OSCAR-II kept transmitting as it re-entered when internal temperatures soared from 25 to 55 degrees in the space of a few orbits. OSCAR-II again showed that amateurs could produce (and improve) a functional satellite, track it and gather telemetry data from around the world. There was a third satellite built in the mould of OSCAR-I and II but was never launched due to the success of its

predecessors. It would be almost another three years until the launch of the next amateur satellite, and that would be worth waiting for.

'I can't believe what Pat was hearing'

The quote at the top of the page comes from an email by Pat Gowen G3IOR. While scanning the 2 metre satellite segment on 21 June 2002, he had heard a familiar CW beacon sending number groups around 8 WPM. He determined it was an old OSCAR satellite, either 6, 7, or 8 but couldn't clarify which one at the time. We all know now that it was indeed AO-7 which had not been heard since mid-1981. The second quote comes from an email to the AMSAT-BB by Jan King W3GEY the next day. Jan was the project manager for AO-7 and had a comprehensive knowledge of AO-7. From those first observations Jan was able to confirm that AO-7 had the following functioning – the solar panels, battery charge regulator, instrumentation switching regulator, mode-U/V transmitter and beacon insertion, Morse code encoder and voltage reference. Soon after, amateurs expanded that list to include most of AO-7's circuitry. The only major on-board failure was the batteries.

At that time AO-40 was operational, UO-14 was the popular FM LEO satellite, FO-20 and FO-29 for mode V/U SSB, UO-22 for the digital enthusiasts and RS-12 for HF. My first contact via AO-7 was with ZL1MO via mode V/H on the 27th June. Great days indeed!

AO-7 has a 24 hour timer that allows it to switch transponders on alternate days. This works well during non-eclipse periods such as we have enjoyed of late. During eclipse periods it will wake up in any of its four modes – mode A with the V/H transponder,

mode-B with the U/V transponder, mode-C with the U/V transponder at low power and mode-D with transponders off. The beacons appear to be more random. I have heard the 70 cm beacon sending CW and on rarer occasions RTTY. This beacon can also be commanded on by ground stations as well as during mode-A. There are no reports that the 2.304 GHz has ever been activated.

One aspect of AO-7 coming back to life has since influenced other satellite missions. Delfi-C3 (DO-64) was flown without batteries and operates only when in sunlight. AMSAT-NA's upcoming Fox-1 will be able to isolate its batteries when they fail and operate only in sunlight.

MEOSAT revisited

With the demise of AO-40 and the low possibility of a successor David Bowman GOMRF came up with a dream idea for a rainy night. He looked at the possibilities of putting a satellite into a medium Earth orbit around 8000 km high. This would give passes around 90 minutes long and a footprint to cover southern Australia with most of Asia. There is a 'safe' area between the two Van Allen belts at heights of 6000 to 12000 km with low levels of radioactivity [1]. The main problem is how to get there. Most flights go to low Earth orbit (500-1500 km) or geostationary orbit (36000 km), neither of which is suitable. The best chance is a flight to low Earth orbit and use some form of propulsion to get to a medium Earth orbit. In the seven years since David proposed the idea there have not been any thruster systems that have had the right combination of small size, low mass, safe propellant etc. to be feasible for satellites less than 10 kg. But now a new method is being developed that has the potential to take a one kg cubesat

from low Earth orbit to lunar orbit in the space of six months, and only weighing 200 grams (including propellant). The MicroThrust ionic motor uses a conductive liquid that has its molecules split into ions which are then accelerated by an electrostatic field to high speeds, of around 40,000 kmh [2]. Previous ionic engines use xenon gas which is ionised and electrostatically ejected. Since these ions are positively charged an extra cathode is needed to emit electrons for an overall zero charge (otherwise the ions would be attracted back to the spacecraft and reduce the overall thrust). A MicroThrust thruster is made up of many miniature thrusters that will emit positive and negative ions so the overall charge is zero. There are no pumps or other mechanical devices needed, no gases under pressure to worry about and the electrical power is relatively low. Ionic thrusters produce a tiny amount of thrust over long periods of time. As

an example NASA's Deep Space 1 was a 373 kg space probe that went to the asteroid Braille and comet Borrelly. It was powered by an ionic engine that produced 92 mN of thrust (about the same amount of force as holding a 9 gram mass at Earth's surface).

Back to David's dream idea. The European Consortium for MEMS based micropropulsion website gives you the opportunity to design your own thruster system [3]. David's MEOSAT page points to a spreadsheet to calculate how much change in velocity is needed to move your satellite to a higher orbit. The default example is 2124 m/s. By using these figures at the microthruster.eu site you can derive how long it will take and how much fuel/mass is needed to get to that orbit. As a quick calculation I used a satellite of 3 kg with a power input of 5 watts, an Isp of 3500 seconds and the default delta-v taken from the spreadsheet. It came up with

an extra mass of 477 grams and a flight time of nearly 11 months. At this stage it is purely a theoretical exercise but who knows what may be achieved in the future. They are already proposing missions to the Moon, Mars, the asteroid belt and manoeuvrable spacecraft that can catch space junk and de-orbit it.

Final Pass

AO-7 has been our highest transponder based satellite since AO-40 went silent in 2004. Although erratic at times it is probably more popular in the last 10 years than when it was originally used. Hopefully we will get more years of use out of the old bird before the solar panels deteriorate too much.

References

- [1] <http://g0mrf.com/MEOSAT.htm>
- [2] <http://www.uk.amsat.org/6180>
- [3] <http://microthruster.eu>



AMSAT-VK

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Website

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station,

Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft. AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly net Australian National Satellite net

The net takes place on the second Tuesday of each month at 8.30 pm eastern time, that is 0930 Z or 1030 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making "skeds" and for a general "off-bird" chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater: 146.850 MHz
VK2RIS Saddleback repeater 146.975 MHz
VK2RBT Mr Boyne Repeater on 146.675 MHz

In Queensland

VK4RIL Laidley repeater on 147.700 MHz
VK4RRF Redcliffe 146.925 MHz IRLP node 6404, EchoLink node 44666

In South Australia

VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz IRLP node 6278, EchoLink node 399996

In Tasmania

VK7RTV Gawler 6 m. Repeater 53.775 MHz IRLP node 6124
VK7RTV Gawler 2 m. Repeater 146.775 MHz IRLP node 6616

In the Northern Territory

VK8MA Katherine 148.700 MHz FM
Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9558. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email. Frequencies and nodes can change without much notice. Details are put on the AMSAT-VK group site.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM "repeaters in the sky" with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night. Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.



VK2news

Tim Mills VK2ZTM
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The Illawarra ARS, after six years of meeting at Industry World, have moved down the road to the Figtree RSL Bowling Club at 120 The Avenue, Figtree. They have also changed their meeting night to the second Wednesday, in the Northern meeting room. See www.iars.org.au
Phil Wait VK2ASD, WIA Vice President, was a guest in April when he presented a cheque as part of the club grant scheme. The club plans to use the grant for an audio visual pack to take to high schools in the Illawarra to promote amateur radio as part of the science curriculum. Phil then talked about BPL.

On Saturday April 14th members of the Tamworth Radio Club were involved in the launch of two balloons carrying various payloads. Both were released from near Breeza and came down almost together near Nundle in the New England part of NSW. The first balloon – Helios – was lifted by helium gas. The other – Loki – used hydrogen. Helios was a project of two secondary school students from VK4, Liam and Ricardo. Using the callsign VK2BTW-12 it carried a SPOT tracker and a recording video camera. Loki was a project of the TRC. It was VK2BTW-11 and had a periodic still camera, 23 cm ATV transmitter and a Geiger counter. The only failure was that the still camera did not operate. Both balloons reached an altitude of over 32 km, and both were tracked by APRS. Details are to be found on the TRC web site www.trc.com.au
This was the weekend of balloon flights with the successful operation of Project Horus VK5ARG-11 on Sunday in VK5.



Photo 1: Jeff Johnson VK4XJJ describing his East to West walking route across Australia.

Over the June long weekend the Oxley Region ARC have their annual field day at the Tacking Point Surf Lifesaving Club hall in Port Macquarie. Details of the weekend appeared last month in AR, on page 33. Check out their web site www.orarc.org come along and join the fun on the NSW mid north coast.

Hornsby & District ARC held their AGM last month. On April 21 they operated in the International Marconi Day when they activated VK2IMD. See their website www.hadarc.org.au

Another successful convention was held on the mid north coast of NSW at Urunga over two days of Easter. Thought to be the oldest continuous fox hunting field day in Australia, having started in 1949.

NSW WICEN had a field operation at the VK2WI site in late April. Originally planned for a site

in the Blue Mountains, uncertain weather conditions prompted the change. More than 50 attended from WICEN, along with other groups including VRA and CREST. There were several lectures and demonstrations together with field set ups of antenna installations. Next month the annual Bushwalkers Nav Shield is on the weekend of 7th and 8th July. The Shahzada Horse enduro will commence Monday 27th August and Trek for Timor in the Blue Mountains on Saturday 15th September. www.nsw.wicen.org.au

Waverley ARS set up a display at Bondi Beach as part of the WIA National Field Day in April. Check them out at vk2bv.org or call Publicity Officer Simon VK2UA 02 9328 7141. Their repeater VK2ROT on 147.025 now requires a 91.5 Hz CTCSS access tone. The annual auction is next month – Saturday 14th July.



Photo 2. Jeff VK4XJJ signing copies of the book "Gulf to Gulf - The Long Walk", the story of his first walk across Australia from Spencer Gulf to the Gulf of Carpentaria.

ARNSW conducted their AGM on 21st April at the VK2WI site. Thirty five members attended and quickly got through the business. They then had a most interesting talk from Jeff Johnson VK4XJJ about his two walks across Australia. The first from south to north through the centre, the second one last year was across Australia from east at Byron Bay in VK2 to west at Steep Point in VK6. Jeff has done these for NETS.

This year an election was not required for ARNSW. Two of last year's committee members did not stand, being Norm Partridge

VK2TOP and Brian Kelly VK2WBK. Joining this year were Al Hirschell VK2VEC and Julian Sortland VK2YJS. President is Terry Ryeland VK2UX along with the Education portfolio, Senior Vice-President Mathew Magee VK2YAP with Broadcasts and Web services and Junior Vice-President Peter Zielinski VK2VG with Security and Education. Secretary is Tim Mills VK2ZTM along with property. Al VK2VEC is Treasurer. Mark Blackmore VK2XOF looks after VK2WI Engineering and Disposals. Bob Yorston VK2CAN has Welfare and Membership. Julian VK2YJS has the library.

Included in the post out of the papers for the AGM a membership card was included. The date on the card indicates when renewal is due. With many amateurs upgrading and changing callsigns there may have been some errors. Where these occurred those ARNSW members should email membership@arnsw.org.au or write to Box 6044, Dural Delivery Centre, NSW, 2158.

The next bi-monthly Trash & Treasure will be conducted at VK2WI on Sunday 29th July. There will be a Foundation training day on Sunday 22nd July. Assessments for all licence grades will be held on Sunday 29th.

In the early part of last century, a famous amateur was Mrs McKenzie VK2GA. Mrs Mac, as she was known, was an electrical engineer, opened a radio shop in Sydney and then, as World War II approached, developed a school to train – first – women in the art of Morse code. This was extended to men across all services. The school continued after the war with Morse training as this was the main means of communication of the day. An extensive report has been posted to Wikipedia about Mrs. Mac – search for Florence Violet Mc.Kenzie for the full story.

73 – Tim VK2ZTM



WAVERLEY AMATEUR RADIO SOCIETY

**Auction of Radio and Electronic Equipment.
Saturday, 7th July 2012**

at

The Scout Hall, Vickery Avenue, ROSE BAY, NSW 2029



All are welcome to attend this annual event to buy or sell. Entry is only \$2 and there is plenty of free parking nearby. The club is adjacent to Lyne Park and Sydney Harbour. Doors open at 8:30 am and the auction commences at 10:00. Full details, including pictures of some of the items to be sold, can be found on the club's web site at www.vk2bv.org.

Contact: Simon, VK2UA. Email: vk2bv-info@vk2bv.org

DX-News & Views

John Bazley VK4OQ
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It is interesting to hear that we could see some more activity from ZS8 following the return of Pierre ZS8M to South Africa. The ship SA Agulhas departed South Africa for **Marion Island** (ZS8) on April 12th with the new 'over-wintering team'. Pierre ZS1HF, formerly ZS8M, said on his Skype profile that 'There could be a new ZS8 callsign activation this year - I will keep you all updated. It could take another three months to get the callsign activated'. The new radio technician's name is Rory; we don't have other information on any callsign he may already have.

During last weekend's International DX Convention in Visalia, California, the **STØR** team was honoured as the DXpedition of the Year as voted upon by the membership of the Northern California DX Club. The **STØR** team was very honoured to receive this recognition. **STØR** co-leaders Antonio Gonzalez EA5RM and Paul Ewing N6PSE received the honour from NCDXC President Russ Bentson K6KLY. **STØR** team members David Collingham K3LP, Roberto Filloy Garcia EA2RY and Hrane Milosevic YT1AD were also present and participated in this great honour. The Intrepid-DX Group and the DX Friends/Tifanti Gang are very proud of this honour and are actively working on future plans for further DXpeditions together. Thank you Antonio Gonzalez EA5RM, the Tifanti Gang, Paul Ewing N6PSE and The Intrepid-DX Group.

The Queen's Diamond Jubilee **special UK prefixes**. Subject to prior authorisation, individual amateur radio operators and club stations in the United Kingdom may

use special prefixes from 5 May to 10 June to celebrate the Diamond Jubilee of Queen Elizabeth II. The second letter in the existing call sign (D, I, J, M, U and W plus E for Intermediate licences) may be replaced by the letter 'Q'; where no second letter exists, the letter 'Q' may be added. For instance, GD0XXX (Isle of Man), G10XXX (Northern Ireland), GJ0XXX (Jersey), GM0XXX (Scotland), GU0XXX (Guernsey), GW0XXX (Wales) and GX0XXX (England) may all be amended to GQ0XXX.

Frosty K5LBU is again on his African travels and says that he and two others are planning to go to 7P8, **Lesotho**, in mid-July. If anyone is interested in joining him on this trip he can be contacted at his e-mail address below. The planned itinerary is arrival in Johannesburg July 12, with a drive to Roma, Lesotho, and operating until July 21. The flight out of Johannesburg is July 22. Frosty's email is Frosty1@pdq.net.

Freddy F5IRO will be in **Uganda**, 5X, from the beginning of May until June 2012, where he has a job assignment. He is not sure exactly how long he will be in Uganda. On arrival he will set up his K3 and DIY antennas, probably verticals or dipoles, space permitting at the location. Some contacts have been done with David 5X1D (KH9AE) who is helping Freddy to get a ticket for the first week of May. He will be working CW on the upper HF bands, especially 10 MHz in the evening (5X = GMT + 3) and maybe a little PSK. Stay tuned and watch the clusters. The QSL route is still via his friend Michel F8DFP, via the French bureau or direct with SAE and IRC/postage.

It is reported that Darko J28AA/E7ØA will be active from **Hargeisa**, May 25-31. He is expected to work SSB/RTTY and six metres. For possible updates (under NEWS), online log and photos see the Bosnia & Herzegovina Contest Club web page <http://bhcc.ba> QSL via K2PF.

Japanese operators JA1JQY, JK1EBA, JA3MCA and JA1KJW will be in Thimphu, **Bhutan** from June 6 to 14 and QRV as A52JY, A52BA, A52MA and A52KJ respectively. Activity will be on 1.8 through 50 MHz on CW, SSB and RTTY. They will have a 'breakable beacon' running on 50.125 MHz. QSL via their home calls.

Daniel ZS6JR will again be active from the Bilene resort, **Mozambique** with the callsign C91JR from April 22 to May 10. He will operate mostly RTTY/PSK, 'holiday style' with 100 watts and a vertical antenna. QSL via G14UFM.

Robert S53R is back in **Sudan**, where he operates as ST2AR. He says he will try to put some focus on six metres 'as it seems the conditions are picking up quick'. QSL via S53R.

F4EBT will be operating from FO, **French Polynesia**, June 1-24. Pat plans to be on Tahiti, OC-046, Moorea, OC-046, Raiatea, OC-067, Huaine, OC-067, Bora-Bora, OC-067 and Maupiti, OC-067. It will be holiday style. QSL to his home call.

Poland and Ukraine will host the 14th UEFA European Football Championship, 'Euro 2012', June 8-July 1, for the first time. There will be **special prefixes** allocated, including EM2012, EN2012 and EO2012. For more details, check out <http://ut7ut.org.ua/index.php/euro-2012/>

Pasi OH3WS reports that many are asking about the possibility of an operation from **Market Reef**. Pasi is a contact person between amateurs and the Finnish Lighthouse Society, which holds the lease on the lighthouse on the reef until 2019. The Society is renovating the second floor of the lighthouse this summer, just for amateurs, so, says Pasi, 'QJ0 is almost QRT until the autumn'. It is possible a voluntary worker may be active with his own rig. It was a hard winter and there is no electricity at the moment. They will also be working this summer on the power system.

GP3ZME/P will be an operation from **Guernsey** in the Channel Islands, IOTA EU-114. Telford and District Amateur Society club members will be there June 22-27. They will be on 160-10 metres, plus VHF+, all the way up to 24 GHz. David 2W0ZJA will be tweeting <http://twitter.com/2W0ZJA>. They will also use VHF talk back and ON4KST chat, <http://www.tdars.org.uk/library/Newsletter%20October11.pdf> QSL via G3ZME by emailing him at buroqsl@pleasemail.me.uk

At VE1AWW is back on **Sable Island**. Unfortunately his antennas did not make the trip, but are expected to arrive later. Once they arrive he will be QRV as CY0/VE1AWW in his spare time for three months. QSL via VE1AWW.

Beginning May 21st Andre GM3VLB will be returning to the **Orkney Islands**, EU-009, where he plans to activate SCOTIA islands Muckle Green Holm (OI20), Linga Holm (OI21), Eynhallow (OI24), Faray (OI28) and Calf of Eday (OI29)

through June 7th or later.

Mike ZB3M and Ed ZB2ER will be active with special call signs ZQ3M and ZQ2ER, May 5 to June 10. They will be celebrating the Diamond Jubilee of Queen Elizabeth II. QSL both calls via ZB3M direct only. No bureau or electronic QSLs.

EM350S in **Ukraine** is May 1-June 30 to celebrate the 350 years of the city of Ivano-Frankivsk. This one will be on all the HF bands and six, CW, SSB and digital. QSL via the bureau, LoTW or eQSL to UW8SM.

SD7V/6 and SD7N/6 will be on the air from **Orust Island**, EU-043, May 11-14, by Ric DL2VFR and Norbert DL2RNS. They will be on HF CW and SSB, high power. QSL bureau or direct to their home calls. They will be LA/DL2VFR and LA/DL2RNS when they go to the **Hvaler Islands** in Norway, EU-061, from May 16-21. Again, QSL bureau or direct to their home calls.

Some QSL information

HK0NA QSL update: The cards have been designed, the order has gone to the printer and the HK0NA QSL card processing should start sometime in May-June. 'This will be an enormous enterprise and will take time to process', N2OO says. 'QSL cards will not be mailed all at one time. We are pre-processing direct OQRS requests first. Direct mail will be next'. Updates will be posted to www.sjdxa.org/hk0na.htm

Cesar PY2YP/PY0S reports he has uploaded a few more **St. Peter and St. Paul Rocks** logs to LoTW and to the log search on the dedicated page at www.py2yp.com [425DXN 1091]: PW0S (February

2001), ZY0SAT (March-April 2001, satellite QSO still pending), ZY0SAT (February-March 2002), ZW0S (April, September and December 2003) and PY0S/PS7JN (November-December 2004, September 2005, January-February 2006). He is now working on paper logs for PY0SJ, PY0SP, PY0ZSA, PY0ZSB and PY0ZSC (September-October 1982) and PY0SK and PY0SR (May 1991). Cesar is also trying to get the logs for 1978 and 1987.

FO8RZ and FO8RZ/p have a new QSL manager. The new route is F5PHW direct, bureau or LoTW. If you have already sent QSLs to F8BPN, don't worry, those are being taken care of. The direct address for the new manager is: Phil Berger, 14 Rue du 4^e Eme Bataillon, FFI 56690 Nostang, France.

The ARRL has announced new guidelines for DXCC card checking. The new procedures will allow card checkers, who have DXCC on 160 metres, to check 160 metre QSL cards. The card checkers can also now check deleted DXCC entities. Complete details can be found, and should be read by all DXers who participate in the ARRL DXCC program, on the ARRL Awards Blog <http://www.arrl.org/awards-blog>

Good luck in the pile-ups until next month.

Special thanks to the authors of *The Daily DX* (W3UR), *425 DX News* (1J1JQJ) and *QRZ.DX* for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of *The Daily DX* from www.dailydx.com/trial.htm



Is your
Callbook
current?



The WIA
2012 Callbook
is now available
www.wia.org.au/bookshop

VK6news

John Ferrington VK6HZ
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G'day from WA! Firstly, thanks to Bill VK6WJ for last months column. I was away on holiday with my family!

From Keith VK6RK -

Three members of the NCRG are making the trip to Freidrichshafen this year for the 36th Annual Ham Convention which takes place from June 22 -24. Andrew VK6IA, Peter VK6PA and myself Keith VK6RK are travelling together to the show. Located on the shores of Lake Constance in the south of Germany, this is the site of the annual Ham Fair. Last year around 16,300 attendees from around the globe made the trip to meet other hams, exchange information, stock up on the latest products, and see new equipment releases. The three day exhibition featured new products from 184 exhibitors, a flea market with a variety of treasures to discover and many informative lectures.

What is the reason for my ramblings you may ask ? Well I'm sure others from Australia will be there and I'd like to propose we meet up at some stage and have a chat, a stein or two, and a

photo shoot for AR magazine. Please contact me, Keith VK6RK at vk6rk@wia.org.au and we will try and arrange a time and place. We look forward to catching up in Germany !

<http://www.eventseye.com/fairs/f-ham-radio-hamtronic-9171-1.html> 73 Keith.

Thanks Keith. I hope you, Andrew and Peter have great time away! Now to Bill at the Hills Amateur Radio Group -

National Field Day

The Hills Amateur Radio Group (HARG), in collaboration with the Peel Amateur Radio Group (PARG), participated in the WIA National Field Day on Sunday 15th April.



Photo 2: The PARG communications trailer set up and in operation.



Photo 1: The PARG communications trailer ready for action.

PARG brought their very professional Mobile Communications Trailer and HARG set up their large gazebo in McCallum Park on the foreshore in Victoria Park just behind Buntings.

We were next to the cycle path and attracted quite a bit of attention from the public, including some CBers and short wave listeners, one of whom attended our next club meeting. The communications trailer also attracted many admiring looks from the 26 amateurs who were there at various times during the day. This included two visiting G calls and two VK5s. We logged about 20 QSO's with the 15 metre high rotatable dipole on the trailer, including Switzerland and Paris and,



Photo 3: Hargfest 2012.

of course, Glen VK6IQ in Wandina, using the VHF/UHF vertical.

Hargfest

HARG's annual buy and sell day was held on Saturday 28th April

at the club rooms in Lesmurdie. Hargfest was a great success with a good turn-up of both buyers and sellers. The sausages in rolls were popular, many old acquaintances were renewed and various items

of radio gear changed hands, producing smiles on both sides of the table. A special thanks to Mark and Graham of TET-Emtron who set up a very popular display and donated several prizes for the raffle.

A special highlight was the presentation of the club's inaugural award for Outstanding Service to the club to Richard Grocott VK6BMW. Richard has worked tirelessly for the club for over 20 years, serving in most of the Committee positions during that time and acting as the glue that has held the club together for so long. Thanks to all the committee and others who worked hard to make Hargfest happen. 73 from Bill VK6WJ - Publicity Manager - HARG.

Thanks Bill.

If you have anything for the VK6 Notes column, please email it to me at the above email address. Thanks and 73's for now!



GGREC HAMFEST

Saturday 21st July 2012

Gippsland Gate Radio & Electronics Club Hamfest at our LARGE venue, the CRANBOURNE PUBLIC HALL, located at the corner of Clarendon St. and High St. Melway 133 K4. See our web page at <http://ggrec.org.au/hamfest>



40 tables of new and used Electrical, Electronic and Amateur Radio equipment.

- Everything is under cover.
- Tea and Coffee available during the event.
- A selection of hot & cold food will be available.
- Great Door Prizes will be drawn at approx 1:00pm.
- Doors open to sellers at 8.30am & buyers at 10am.
- Buyers can gain entry for \$6.00.
- Sellers will pay \$20.00 per table, which includes entry
- Proceeds from the sale will go to Gippsland Gate Radio & Electronics Club's ongoing promotion of Amateur Radio.

Persons wishing to reserve a table position must contact Steve Harding now on 0408 878934 or email hamfest@ggrec.org.au Book early, positions are limited!



VHF/UHF - An Expanding World

David Smith VK3HZ
e vk3hz@wia.org.au

Weak Signal

A short tropo opening from the east coast to ZL was probably the highlight of the month. During the morning Meteor Scatter session, Bob ZL3TY observed that the Channel 5A TV vision carrier from Newcastle was up to S2. By 2230Z, it had reached S3. Steve ZL1TPH/P portable at Moirs Hill in the north was also hearing the TV at S2. At 2240, Bob worked Steve VK2ZT first on CW (519) and then SSB (5x2). Collin VK2BCC also worked Bob on SSB (5x2). Norm VK3DUT then appeared and worked Bob at 5x2. By 2330Z, signals had risen and Colin had a CW contact with Bob (559). Steve ZL1TPH/P was reporting the Newcastle TV as having rolling QSB from S1 to S5. Finally, at 0300Z with the TV having risen to S9, Steve ZL1TPH/P worked Steve VK2ZT (5x1) and Colin VK2BCC (5x1). By 0315Z, signals had dropped off and the opening disappeared.

It will be a big loss to those monitoring the ZL-VK path when Newcastle Channel 5A shuts down in November. With an EIRP of 70 kW, it is equivalent to someone running our legal limit of 120 W into a 27 dBi antenna. That makes it an ideal early-warning indicator for propagation on 2 m. We may have to look for alternatives for monitoring the path, like a digital-mode beacon running into a directional antenna.

2.4 GHz QSO Party

Another microwave activity day was organised recently in VK3. Rob VK3MQ reports: 'The third annual 'VK3 2.4 GHz QSO Party' was held on Easter Monday, April 9, 2012. The success or failure

of any event like this rests with the enthusiasm and commitment of the participants and this year severely tested both elements.

Despite good weather leading up to the day (and following for that matter) the heavens opened up, releasing hail and rain in good measure. My own experience started on John's Hill, QF22rc, at 8.00 am setting up the two metre antenna. Having just completed this task the rain front, which had been approaching from the south, hit and a scramble for the car was called for. A brief lull in the storm allowed the 2.4 GHz antenna to be installed before the rain resumed.

At this point Gavin VK3HY arrived and we discussed the advisability of continuing the setup, as we both had 10 GHz stations to deploy. Some activity on the two metre calling frequency did encourage us to at least attempt 2.4 GHz and we were soon in contact with VK3PY, VK3QM and VK3AKK.

I noted home stations in the suburbs, which were otherwise dry, battling Wi-Fi interference but nevertheless completing QSOs over difficult terrain.

Special congratulations must go to Andy VK3ES for his contact with Ted VK1BL, establishing a new VK1 2.4 GHz record of 424.9 km.

Despite all that nature could throw at us I think a good time was had by all and the continuance of the event is assured.'

New Records

Several new VHF/UHF records have been added to the list:

03/01/2012 - VK5 2 metre record -

VK5BC to ZL2OK - 3493.9 km

13/02/2012 - 24 GHz digital modes record - VK3HZ to VK7MO - 255.1 km

23/02/2012 - VK7 24 GHz record - VK7MO to VK3QM/7 and VK3AKK/7 - 167.4 km

25/02/2012 - VK7 2.4 GHz and 5.7 GHz records - VK3QM/7 and VK3AKK/7 to VK3NX and VK3PY - 469.1 km

09/04/2012 - VK1 2.4 GHz record - VK1BL/1 to VK3ES - 424.9 km

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au



Digital DX Modes

Rex Moncur
VK7MO

VK7JG qualifies for Worked All Call Areas on two metres

The VHF Worked All Call Areas award requires three contacts each with VK2, 3, 4, 5 and 6 and one each with VK0, 1, 7 and 8. Joe VK7JG had achieved the more difficult VK0 by working VK0MT on Macquarie Island, VK7MO portable VK8 and VK9LS at Lord Howe Island (operator VK7MO) all on meteor scatter but still required one more VK6 for the award. When Michael VK6WS became operational on EME, Joe saw this as his opportunity. Joe has only a single 18-element Yagi and Michael had two 9-element Yagis. While there was evidence of signals both ways, a QSO could not be completed. Michael then put up a set of four seven-element LFA antennas and while decodes were achieved over many attempts, a QSO still eluded them. Michael then moved to four

nine-element Yagis and by choosing a time when the degradation was low, a QSO was finally achieved to complete Joe's qualification for the award. Congratulations Joe and Michael.

King Island 10 and 24 GHz DXpedition

From 12 to 14 April Rex VK7MO and Eric VK7NFI visited King Island to activate three rare grid squares QF10, QF20 and QE19 which are only accessible from the island. Eric was the pilot and provided his light two-seater aircraft to access the island. There is only a small amount of room behind the seats so the 10 GHz system had to be specifically designed to fit the aircraft and used a small 47 cm plastic offset dish. When the idea of taking 24 GHz came up, and more room was required, it was necessary to push the seats hard forward such that it became a contortion exercise to fit into the aircraft, as shown in Figure 1.

Paths of Propagation

Figure 1 shows the paths of propagation to the stations. The list of stations worked from each grid square was as follows: (*) for stations at John's Hill lookout and # for stations at either Anglesea or Bayview).

QF10 10 GHz: VK3HZ*, VK3PY#, VK3AKK#, VK5DK, VK3ZQB, VK3HY*, VK3MQ*, VK3PF, VK3NX#, VK3BQJ, VK3TPR*, VK3WRE, VK3QM# and VK3ALB#. Best distance VK3BQJ at 393 km -13/-15 dB JT65c.

QE19 10 GHz: VK3HZ*, VK3MQ*, VK3TPR*, VK3HY*, VK3PY#, VK3AKK#, VK3QM#, VK3NX#, VK3ZQB and VK5DK. Best distance VK5DK at 372 km -12/-20 JT65c.

QF20 10 GHz: VK3HZ*, VK3NX#, VK3PY#, VK3AKK#, VK3QM#, VK3MQ*, VK3HY*, VK3PF and VK3BQJ. Best distance VK3BQJ 400 km -15/-17 dB JT65c.

Attempts were made on 24 GHz on 12th and 13th of April from QF10 and QF20 but nothing was heard or seen. On 14 April we returned



Photo 1: Rex VK7MO after squeezing into the aircraft with equipment behind the seats.

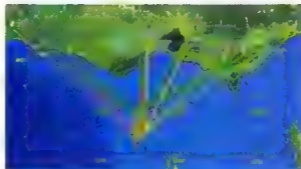


Figure 1: Paths from King Island to stations worked.

to QF10 and started on 10 GHz to pick up stations not worked earlier. The Geelong group had moved a little closer to Anglesea (132 km) and were giving reports of 5/9+60 dB which augured well for 24 GHz. As soon as VK7MO started TXing on 24 GHz, the Geelong group received the signal and reports were exchanged at 5/8 and 5/9 on VK3NX's system and 5/2 and 5/9 on VK3QM's system running 60 mW. The Geelong group then moved back to Bayview to extend the distance while we focused on VK3HZ at John's Hill lookout, who was worked at -20/-18 dB on JT65c. At Bayview VK3NX was worked at 5/4 and 5/7 over 161 km.

Stations worked on 24 GHz were:

QF10 24 GHz: VK3NX#, VK3QM#, VK3AKK#, VK3ALB# and VK3HZ*. Best distance VK3HZ 226 km.

Overall the results were beyond expectations and Rex was ecstatic

with the 24 GHz results as may be seen in photo 3.

King Island 10 and 24 GHz DXpedition – The Other Side

Peter VK3PF reports on his efforts on 12/4 from QF31 in working Rex VK7MO in QF10:

That morning I finished off the PC/FT-817 sound card interface and thought that I had everything OK ... Well, not quite it turned out.

I went across to the Mardan area - QF31bn, on the side of the hill 'Mardan' at about 260 m ASL. The site had a reasonably clear take off in the correct direction, with convenient visible landmarks for aiming. From about 0530Z, I was



Photo 2: An ecstatic Rex VK7MO after the 24 GHz QSOs with 24 GHz dish and system.

successfully hearing Rex at about -21/-22. However, Rex was not hearing me. We gave up after a bit to allow Rex to work others.

At about 0630Z, Rex gave me a 'phone call and we tried again. This time I did another gentle sweep with the dish and found that I needed to drop elevation to get a peak - Rex was now -12! Much better. But I had DF issues, plus Rex was not hearing me. We agreed to try later as Charlie VK3NX was now ready. I had a quick check of the system and found that the audio level was too low via the interface. After adjusting the level, I called Rex via the mobile and he was hearing me. So we resumed attempting a contact. For reasons unknown (apart from my operator brain fade and more than two years since I last operated WSJT) I could not get DF into the reliable decode region.

I gave up and called Rex on USB. Shortly after we completed a USB contact - Rex was 55 and I received 52. Thanks again Rex - a new square on 10 GHz on SSB. Lesson for me - more preparation, including lots more time using WSJT again!

Gear was a homebrew interface to the FT-817 via the data port, to a

MaCom Whitebox with VK3XDK LO locked to a Thunderbolt. The 817 is not locked. Antenna - a typical Austar PayTV dish fed with about 1.5 m of FSJ4-50.

Charlie VK3NX reports on his contacts on 10 GHz and 24 GHz: This morning (Saturday, 14th April) Lou VK3ALB, Ken VK3NW, David VK3QM and myself went to the Anglesea Lookout to work Rex.

Rex was worked on 10 GHz with excellent signals and then upon QSY'ing to 24 GHz we proceeded to work Rex on 24 GHz. Signals were 'enormous' on SSB and 59++ reports exchanged both ways with no QSB. We even had an FM contact with 'full quietening'! This was following our disappointment a few days earlier on 24 GHz.

The distance to Rex was ~ 132 km and this was purely over water and 'over the horizon'. We were ~53 m above sea level with an estimated optical horizon of ~ 30 km.

Following this success (loudest signals I've worked so far on 24GHz) we decided to try an obstructed path from our field day site. A quick drive and 30 minutes later we were working Rex with 57/54 reports exchanged. QSB was strong and soon after signals started to 'disappear'. Our field day site is ~ 29 km further to Rex than the initial contacts with the extra part of the path over 'Terra-Firma'. Distance is 160.6 km (~6.8 km shy of the VK7 record set earlier this year). At this time a very visible duct layer was evident on the horizon and I assume this was part of the reason for the very large signal attenuation.

All in all, a very interesting exercise in propagation along a 'non line of site path'. I am looking forward to trying over much greater line of sight paths...

My homebrew 24 GHz equipment:

System 1- 600 mW 300 mm dish, Kuhne transverter. System 2 - one W, 600 mm dish, Thales unit with 1296 - 144 double down conversion. Thanks Rex for the 'DXpedition' to King Island and the great contacts over the last few days on 10 GHz and 24 GHz.

David VK3HZ reports on the efforts from John's Hill over the three days:

On Thursday, Friday and Saturday, a group of keen microwavers gathered at Johns Hill Reserve carpark on the east side of the Dandenongs to work Rex VK7MO as he travelled around King Island. Present with gear primed for 10 GHz were:

- Gavin VK3HY - Mitec transverter and one watt Kuhne PA to 650 mm offset-fed dish.
- Rob VK3MQ - VK3XDK transverter and one watt Qualcomm PA (low drive producing 0.4 W) to a 650 mm offset-fed dish.
- Peter VK3TPR - Mitec transverter, GPS-locked and three watt DEMI PA to a 600 mm prime-focus dish.
- David VK3HZ - Qualcomm transverter, GPS-locked and eight watt DEMI PA to a 600 mm prime-focus dish.

For 24 GHz, I also had a Thales transverter (~1.5 watt), GPS-locked to 380 mm prime-focus dish.

I have operated from Johns Hill on many occasions as it has a clear take off to Tasmania. For heading reference, a shed in the distance falls conveniently due south of my favourite location in the south eastern corner of the carpark. However, on Thursday morning, I happened to look at a photo of the outlook in the direction of King Island and saw two large gum trees rising well above the horizon.



Photo 3: (L-R) VK3TPR (2 dishes), VK3HY, VK3HZ dish and VK3MQ.

Saturday morning and have another go at 24 GHz, this time from the closest point on King Island in QF10

Saturday, Peter was again present and had set up as he hadn't worked Rex in QF10. Gavin and Rob were there but only observing. Rex's signal was down a little on the previous evening, but still 5x7. Peter easily worked Rex who also worked a number of others.

Then Rex assembled the 24 GHz system and

easily worked the Geelong group who were now located somewhat closer to him at Angelsea. He turned his dish our way, and immediately there was an audible tone on 24,048.325 MHz. We quickly switched to JT65c and had a contact exchanging -18/-20 reports. Then we switched back to tones and attempted to improve our signals by tweaking our dish alignment (Az and El). I found that I was already pointing correctly which I was pleased to see - confirming my calculations and 'reference shed' position. Rex also was unable to improve on his initial pointing. Signals were fading, so we tried a CW contact using the WSJT CW mode (neither of us had a key, although Gavin did offer the use of his ...). We copied Rex's 419 report, but he was unable to copy ours so we gave it away as signals were dying off - a pity as at 226 km, it would have been a new VK7 record, and only four km off the national record.

So, all in all, a very successful few days, and I was very pleased to get through on 24 GHz. I am rapidly concluding that 24 GHz is a completely different beast to 10 GHz. The level of moisture in the air along the path makes a dramatic difference to the signal levels

Thanks to Rex VK7MO for all his efforts.

Fortunately, there is a gap between the trees, so a move of about 20 metres to the west was needed, and a re-survey of the 'reference shed' showed it was now about one degree east of south - important when the beamwidth of the antenna on 24 GHz is less than that.

When I arrived at the carpark, slightly late, Gavin and Rob were already there and set up in the south western corner under the shade of some large trees - and in line with the gum trees, blocking their path to King Island. When I suggested a possible move, the reaction was 'it won't make THAT much difference, will it?' and they thought they'd have a go from the comfort of the shade.

Finally Rex's JT65 signal appeared and we exchanged -12/-8 reports. Gavin was seeing about -23, while Rob wasn't seeing much at all. So, a hasty relocation of their systems was carried out while Rex turned away to work the queue of stations lined up across the state (and VK5DK). Finally, Gavin got to try again and signals were now 10 dB stronger, out from behind the trees. Rob was still having challenges until we bodily leaned his offset dish forwards about 15 degrees, whereupon Rex's signal rose substantially. Rex re-aligned his system a little, and we now had SSB contacts up to 5x7.

On Friday, Peter VK3TPR joined us for the morning (work getting in the way of any afternoon operation). We re-aligned the elevation on both Gavin and Rob's offset dishes on the VK3RGI beacon coming through trees on the eastern side. Rex, now in a more difficult spot on the south western side of the island in QE19, was worked easily on JT65 with reports of -6 each way. We also all worked him on SSB with reports up to 5x8.

Peter then departed for work, while Gavin, Rob and I - waiting for Rex to relocate across the island - exchanged tall tales and true of ever more difficult QSOs we had (possibly) had - and the only beverages consumed were coffee and a strange sugar-free liquid that Gavin had brought.

Finally Rex was available again, this time in QF20, and we exchanged reference levels of -5/-1 on JT65 and 5x9+ SSB reports - the proverbial rock-crushing signals.

Once Rex had finished with the dogpile on 10 GHz, he assembled his 24 GHz system and attempted to work the Geelong crowd, without success. He also turned it our way, but there was absolutely no trace of a signal either way on JT65. We confirmed that 10 GHz was still as strong, but nothing on 24 GHz ... So, we agreed to re-convene on

Initial 10 GHz EME tests with small 64 cm portable station.

Alan VK3XPD has been using his 50 watt three metre dish 10 GHz station to test if it is possible to work Rex VK7MO on EME on his eight watt 64 cm dish portable 10 GHz station using JT65c. The technique used was to automatically tune Rex's IC-910-H IF transceiver to compensate for Doppler on both TX and RX so Alan did not have to tune for Doppler (The program for automatic Doppler correction was written by Glen VK1XX for the IC-910H and picks up the Doppler value from WSJT - it can be made available to others who may wish to use it with an IC-910-H by contacting Rex VK7MO at rmancur@bigpond.net.au. Also both stations were GPS locked or intended to be. The tests were also run at a time of low Libration spreading as predicted with GM4JJJ's Moonsked program.

The following examples on Table 1 of the signals received by Rex (there was a problem with Alan's GPS locking which explains the DF of around 720 Hz and some drift in the tests as below). The bold numbers in the last column show the predicted libration Spreading. It is noted that the reported signal level on WSJT increased from about -22 dB when spreading was low at around four Hz to around -26 dB when spreading increased to around 40 Hz.

While Alan could see Rex's signal he did not achieve a decode which is not surprising given the power difference and the Doppler spreading. He may also not have sorted things out to find Rex's signal until later in the tests when the libration spreading was wider. It is intended to run the tests again at a time of low spreading in the hope of achieving a two way QSO.

Rex & Alan have now completed a QSO. Ed.

Please send any Digital DX Modes reports to Rex VK7MO at rmancur@bigpond.net.au

070300	4	-22	2.2	725	5	*	VK7MO	VK3XPD	QF22	0	10	4
070500	2	-22	2.3	723	6	*	VK7MO	VK3XPD	QF22	0	10	4
070700	2	-22	2.3	723	5	*	VK7MO	VK3XPD	QF22	0	10	5
070900	1	-25	2.4	725	6	*	VK7MO	VK3XPD	QF22	0	10	6
071100	3	-21	2.3	731	6	*	VK7MO	VK3XPD	QF22	0	10	7
071300	4	-24	2.3	731	7	*	VK7MO	VK3XPD	QF22	0	10	8
071500	6	-23	2.3	734	7	*	VK7MO	VK3XPD	QF22	1	10	10
071700	2	-24	2.3	736	8	*	VK7MO	VK3XPD	QF22	0	10	12
071900	6	-22	2.3	739	7	*	VK7MO	VK3XPD	QF22	0	10	14
072100	2	-25	2.3	739	7	*	VK7MO	VK3XPD	QF22	0	10	15
072300	4	-22	2.3	742	9	*	VK7MO	VK3XPD	QF22	0	10	16
072500	5	-23	2.2	744	9	*	VK7MO	VK3XPD	QF22	0	10	19
072700	4	-23	2.3	752	8	*	VK7MO	VK3XPD	QF22	0	10	21
072900	4	-24	2.3	752	11	*	VK7MO	VK3XPD	QF22	0	10	23
073100	3	-24	2.2	752	9	*	VK7MO	VK3XPD	QF22	0	10	24
073300	3	-25	2.3	752	12	*	VK7MO	VK3XPD	QF22	0	10	26
073500	3	-24	2.3	752	11	*	VK7MO	VK3XPD	QF22	0	10	28
073700	2	-25	2.3	747	7	*	VK7MO	VK3XPD	QF22	0	10	29
073900	3	-26	2.3	750	15	*	VK7MO	VK3XPD	QF22	0	10	31
074100	4	-24	2.3	755	12	*	VK7MO	VK3XPD	QF22	0	10	33
074300	3	-24	2.3	752	12	*	VK7MO	VK3XPD	QF22	0	10	35
074500	3	-25	2.3	750	9	*	VK7MO	VK3XPD	QF22	0	10	36
074700	4	-25	2.3	747	11	*	VK7MO	VK3XPD	QF22	0	10	38
074900	2	-26	2.3	739	10	*	VK7MO	VK3XPD	QF22	0	10	40

Table 1



The Magic Band - 6 m DX

Brian Cleland
VK5BC

Although there were almost daily openings from VK to the northern countries of Japan, Korea and China, April was disappointing with very few openings to the Pacific, northern or central America areas and nothing towards Europe. There was very little activity on the Sun and at one stage during the month the Solar Flux dropped to below 100 but a little flare activity towards the end of April lifted the Solar Flux and caused some activity particularly from the northern areas of VK. VK6 seemed to be the lucky state with regular openings to the north throughout the month from as far south as Perth, which have in the main missed VK2, 3, 5 and 7.

As mentioned above VK6 experienced some good openings to the north and Andy VK6OX reports the following:

Well... after an excellent five week holiday in ZL, I arrived back late March expecting that any activity on six metres would have subsided. As things turned out, that's definitely not the case! What follows is a précis of six metre activities as experienced from the Perth area.

On 4th April the 49.75 MHz videos from Russia/China came in weakly, around 0430Z. At 0628Z I worked Kwon DS2CYI and later on worked Hide JR6EXN at 0808Z. Next day (5th) the band opened up nicely to JA, with JA1, 2, 3, 4, 7 and 9 areas being worked from about 0520Z to 0735Z. Most signals into Perth were S9 or over.

The band opened briefly again on the 6th, and several of us (VK6KXW, JJ, RX, RO and the writer) managed to work Gennady UR7FM/MM on CW. He gave his locator as OJ34, which placed him (and the bulk carrier he was on!)

in the South China Sea between West Malaysia and Borneo, heading towards Singapore.

The rest of the Easter period saw little activity from this QTH, but on the 10th we had another somewhat patchy opening to JA, with three stations worked from here. The 11th produced yet another interesting opening with somewhat shorter F2 contacts being made along with JA and HL. Several Perth 'sixers' worked (variously) Willem DU7/PA0HIP, John 9M6XRO, Tan 9W6RT and several JAs and HL/DS stations from South Korea. Of particular note was the successful QSO's of Peter VK6KXW and John VK6JJ with the Spratly Island DXpedition 9M0L.

Not to be outdone, next day VK6RO, RZ, DU and OX (maybe others?) also worked 9M0L! Dave VK6AOM in Jurien Bay (about 250 kms north of Perth) and Rick VK6XLR at Geraldton were also worked from this QTH, courtesy of some tropo conditions prevailing at the time (around 0930Z).

For the next few days it was quiet on the band, but on the 16th we had propagation to JA and HL (the latter stations of which seem to be more active of late).

Again there were three days of little or no happenings, but on the 20th I worked Jinho HL1LUA and 9M0L (again) both on CW around 0500Z. On the 22nd, the band opened to JA and HL yet again, with many stations worked over a three hour period from roughly 0530Z to 0830Z. The 23rd saw a repeat of the previous day, but yours truly decided to play SWL! I did work one JA on CW though!

The 24th promised some hope with the SFI around 142, K-index 23 (!) and A-index 5 (yuk!) but unfortunately no stations were worked, just weak TV video carriers from up north and even weaker JA beacons! If I've missed any VK6 operators in Perth area who were involved in the foregoing openings, I apologise.

From a little further north Rex VK6ARW in Exmouth reports that

he has not been too active of late with other tasks about the place, but on 22nd April he responded to a call from a JA station at 0700Z and gave it away at 0819Z after logging 92 JAs. Prior to that pile-up Rex had worked 57 others on six metres between January and April which included China, Hong Kong, South Korea, Philippines, JA's, East Malaysia, and a MM somewhere in the South China Sea with a UR5FA/MM call.

Rex is planning to build a six element six metre LFA which he hopes will attract some 'Rare' DX. Good luck Rex.

Meanwhile from Darwin, Gary's VK8AW log for April included the contacts as listed in Table 2 below:

On the morning of the 25th April Andrew VK3OER heard Bob ZL1RS and shortly afterwards at 0056 UTC worked N3LL 5/2 SSB in Florida over a distance of 15,445 km. During the month Andrew also work into Hawaii on the 14th and 27th completing contacts with Art KH6SX and Fred KH7Y. Same morning Norm VK3DUT was hearing the ZL2WHO beacon and heard

N3LL and the TI2NA/b 419. Norm then nearly completed with XE1JP but unfortunately he missed a letter in Norm's call before fading.

Frank VK7DX also worked KH7Y 5/1 SSB on the morning of the 25th and reports hearing BA4SI, 3W2BB, AH0BT, T88WJ and many JAs during month.

A good opening to the USA from the Hervey Bay area on the morning of the 26th with Wayne VK4WTN working several stations including N6KK, K6QXY and K7JA. During this opening the band opened between VK4 and VK5 and with the aid of the Es extension. Brian VK5BC heard K6QXY calling CQ on CW. Norm VK3DUT also heard the K6FV/b.

Openings to JA areas occurred most days to northern areas of VK but did extend south to VK3 and VK5 on the 14th when BA4SI was worked with very strong signals into VK3 and VK5. JAs were also worked in the southern states on 27th April.

Please send any six metre information to Brian VK5BC at briancland@bigpond.com

01/04/12	0300Z	USB	KH6RH	GARTH	HAWAII	5/2
01/04/12	0310Z	USB	KH7JJ	NED	HAWAII	5/3
02/04/12	0907Z	CW	A61Q		DUBAI	5/5
10/04/12	1300Z	CW	9M0L		SPRATLY ISL	5/5
12/04/12	1235Z	CW	A45XR	CHRIS	OMAN	5/5
12/04/12	1250Z	USB	9W6RT	RODGER	E MALAYSIA	5/9
13/04/12	0935Z	USB	A92IO	DAVE	BAHRAIN	5/9
21/04/12	2330Z	CW	FK8CP	REMI	CALEDONIA	5/9
21/04/12	2333Z	USB	FK8CP	REMI	CALEDONIA	5/9
21/04/12	2335Z	USB	TI7/N5BEK	PHILIP	COSTARICA	5/1
23/04/12	1015Z	CW	J11CUL	PAPA	JAPAN	5/5
25/04/12	0730Z	CW	KH7Y	FRED	HAWAII	5/7
27/04/12	0320Z	CW	KH6HI		HAWAII	5/5
27/04/12	0756Z	CW	A92IO	DAVE	BAHRAIN	5/9
28/04/12	0900Z	USB	YB1MH		INDONESIA	5/9
28/04/12	0915Z	USB	YB0AN	HATKI	INDONESIA	5/9
28/04/12	1140Z	CW	JE1BJT		JAPAN	5/5
28/04/12	1148Z	CW	A92IO	DAVE	BAHRAIN	5/9
28/04/12	1205Z	CW	BD8ASG		CHINA	5/9
28/04/12	1220Z	CW	HL2CFY	KIM	KOREA	5/9

Table 2

Silent Key

Bruce Hedland-Thomas VK6OO

21 October 1938 5 April 2012

Bruce grew up in Northam and Inglewood, moving to Inglewood at the age of 10. Before they left Northam, Bruce was taught to play the cornet by the bandmaster of the local Salvation Army and remained part of the Salvation Army Band until the age of seventeen. Attending Perth Boys' High School for three years did not lead into a leaving certificate as his father thought security lay in having a trade.

Bruce followed his father's advice and became an apprentice electrical fitter, first with an electrical contractor and then with the WA Government Tramways and finally the Railways. After a couple of years working on diesel-electric locomotives he lost interest and found a job as a Laboratory Assistant in the Fuel Technology Division of the Government Chemical Laboratories.

Being a bit of a petrol head at this time (his words), Bruce imagined himself running a Ricardo variable compression engine to determine octane ratings of fuels. Imagine the anti-climax when he learned that the bread and butter of the division was to perform trials on steam raising boilers in government hospitals and other facilities.

In 1967 Bruce studied physics at the Western Australian Institute of Technology (later to become Curtin University). In the early 1970s Bruce moved to the UK to undertake post-graduate studies at the University of Surrey, graduating with a Masters in Physics and joining the Medical Physics Department at Guy's Hospital in London. While in the UK, Bruce was licensed as G4EKR. In 1975 Bruce returned to WA and joined the Medical Physics Department at Royal Perth Hospital where he was involved with



Radiotherapy (Radiation Oncology) treatment for cancer. Bruce retired from RPH as Senior Physicist in 1999.

Shortly after arriving back in WA, Bruce obtained a reciprocal licence as VK6OO and joined the WIA. In 1978 Bruce became a WIA Councillor and served continuously on the VK6 Council for 27 years from 1978 until 2005:

1978/79 – Assistant Secretary and Councillor,
1979/80 – Vice-President and Federal Convention Observer,

1980/81 – 1987/88 – Eight years as President and Alternate Federal Councillor,

1989/90 – 1990/91 – Councillor, Alternate Federal Councillor and

1989/90 – 2005 – Treasurer until the Division was wound up in 2005.

Those amateurs who worked on Council with Bruce during those years said that he was always a delight to have at a council

meeting and had a dry wit along with a balanced gracious approach. He was always focussed on resolving any 'issues' in the most efficient and amicable way.

Bruce was not able to spend much time on air from 1978 because most of his leisure time was taken up by the administrative side of amateur radio and his other interests of choral singing, music, hi-fi and photography. However, he had a very handsome set-up of HF and VHF transceivers in a beautiful purpose-built desk feeding a TH3Jnr beam on a tower plus a trapped HF vertical and various VHF antennas.

Bruce completed and had published for the widow, the autobiography called 'A Radio Active Life', which Harry VK6WZ had nearly finished when he became a silent key. Later in life, Bruce the petrol head was to express his love of motor cars as the President of the local branch of the Austin Car Club and spent many happy hours in his garage restoring various models. A cavalcade of Austin cars was a highlight of Bruce's funeral.

In November last year Bruce was diagnosed with an inoperable cancer around his oesophagus and died on 5th April, 2012 at his home under the care of the Silver Chain Hospice Service. Bruce is survived by his wife Dorothy, his two daughters Geneva and Rebecca and his two stepsons John and Jason.

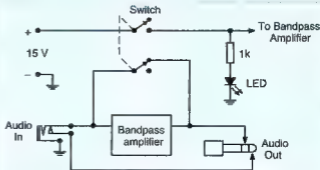
Amateur radio and the WIA will forever be in debt to Bruce for the time he unselfishly gave to the administration of his hobby.

Contributed by Bill Rose VK8WJ.

Erratum | A BPSK bandpass filter

A reader has noted an error in a portion of Figure 1 of the article "A BPSK bandpass filter" by John Sutcliffe VK3TCT, published in the May issue of /Amateur Radio/ (pages 44 - 46). The circuit concerned is the power supply and switching arrangements in the lower left portion of Figure 1.

As shown, the switching actually bypasses the bandpass amplifier. The Figure on the right shows a corrected version of that portion of the circuitry.



© WIA April 2012, 1 correction Down by VK6BH

A telephone conversation with Al Shawsmith, ex-VK4SS

Peter Hadgraft VK4APD



Alan Shawsmith VK4SS in an animated discussion with WIA President Michael Owen VK3KI in 2008, on the occasion of the presentation to Alan of the GA Taylor Medal.

On the occasion of Alan Shawsmith's being awarded the GA Taylor medal by the WIA, I wrote to him.

Dear Sugar-Sugar,

On behalf of the Historical

Wireless Society of SE Queensland, allow me to congratulate you on your recent receipt of the prestigious GA Taylor award. Although there comes a time when ego-boosting awards are no longer important, it must be nice to know that one is not forgotten, and that one has made a satisfying contribution to the radio amateur fraternity in particular, and to society in general.

Yours sincerely...

A week later, I received a phone call "Al here, man". To point out that he didn't have such a big ego, he had showed his daughter the letter, and she said that everyone has to have some ego.

"I've never been big-headed, man, but always put myself forward. I've had a great life and experiences you wouldn't believe. But that's another story.

"I've been called everything, but being called egotistical isn't a big thing."

I interjected. "Called everything

except 'sir', eh?"

"Well, as a matter of fact, I worked in logistics in the RAAF during the war. I was known as Smithy, of course. One day a mate came up to the hut and asked "Is Sir Charles there?"

"I came out of the RAAF with PTSD. To this day, I can't watch war films with aeroplanes. I know what will happen."

"Before I finish, there was something else I wanted to say. They reckon, man, I've written over a million words as a journalist and historian. At one stage I was writing about three columns a month, like contesting, and historical stuff. I counted it up myself and it's probably more like two million."

I said "Reminds me of the old 'Gabba Russian joke.

Host says to his guest 'Have some more.'

'No thanks', says the guest, 'I've already had two.'

'Actually you've had three,' replies the host, 'but we don't count here.'

Continuing, Al added, "One thing, I've always had was a good memory. I got that from my father. Grandfather was a miner, but father was in the Missing Persons Bureau. That didn't go down too well. He was never there, and no one had seen the top of his desk for years. He was always elsewhere."

"So, Al, you got more from your Dad. He had a good memory, was a careful observer and listener, researcher, and loved dealing with people."

"Right on, man," said Al, "but in fact I've really been a journalist, not a historian."

"And before I finish, have you got the time?" ("Yes, wife's in church and I'm home alone."). There's something else I wanted to say. This letter you sent me, there's no date

and you haven't signed it."

"Al, I will drop by and personally sign and date it."

"And that award I got. A few days before I received it, my son rang to say "There are a few people coming Saturday morning. Spruce yourself up for it." "I thought a few of his mates were coming around. Now I gotta say when I was a young bloke, I played footy. I was light but quick. Still, I couldn't always get past those big forwards. Then I played hockey. And got belted in the back with a boot or stick - ending up with a fractured, and twisted vertebrae. The doctor patched me up, said I would improve, but that my back would probably come back to haunt me in my old age. Never a truer word. You have good days and you have bad days. Come Saturday morning, I was crook, could hardly move. I rang the son and said, I'm buggered, man." Son replied "No, you'll be right Dad. Now get up and get yourself ready."

"I got up, had a shower, shave, shampoo. My legs barely held me up. About 11 o'clock there's a knock at the door, and in comes, among others, the President of the WIA, Graham Kemp and Mick Charteris of the Ipswich group (but that's another story). Suddenly there's a whole lot of other people, there's lights and cameras. Every point in the house is being used. My voice wasn't too good, and I reckon I didn't put on too good a performance."

"The President said a few words, like one does on these occasions. I'd never heard of the Taylor medal. Then he opens this beautiful polished wooden box, and showed the medal inside, and that it really did exist."

"Yeah, and there was one other thing. My son now has my call-sign, VK4SS."



An isolated USB interface for controlling radio equipment

Dale Hughes VK1DSH

Times change; it wasn't long ago that every PC had at least one RS232 serial port. That port was very useful for talking to modems and other devices. The various handshaking lines were convenient for controlling radio transceivers or other devices; it was simple and reliable. However the RS232 standard is now quite old and in many ways is obsolete; most modern computers, especially laptops, no longer are equipped with RS232 ports. Serial ports have been generally replaced by the USB connector, which although being based on a serial protocol, lacks any hardware handshaking lines and is relatively complex from a hardware and software perspective. So what

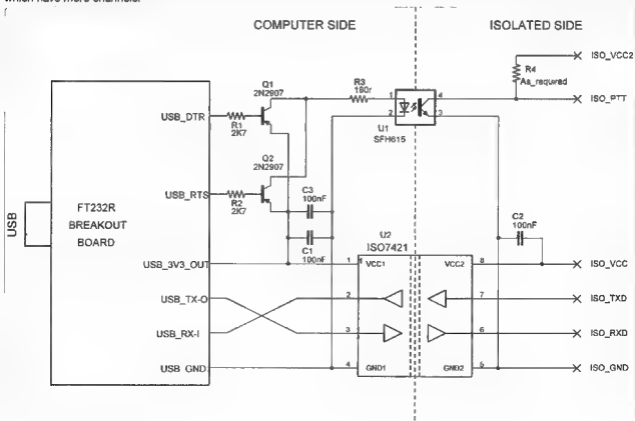
do you do when you want to control your radio from your favourite communications software?

One simple solution is to use a common USB to RS232 converter cable and I have used this approach a number of times. The main problem with it is that some converter cables are known to be 'difficult' and it's messy... another cable to get lost, accidentally disconnected etc. It would be so good just to be able to use a standard USB cable and dispense with the separate converter cable. My initial thoughts were to build a device using one of the various USB to serial converter chips from *Future Technology Devices International Ltd*. See <http://www.ftdichip.com/>

The FT232 series devices are readily obtainable, easy to use and inexpensive. However, when reading another technical magazine I noticed an advertisement for a 'USB breakout board for ft232rl' and this appeared to be a better solution. It's a small printed circuit board fitted with a USB connector and a FT232 USB-serial converter chip – and it has handshaking lines. The beauty of the thing is that:

1. it can be built into whatever device you want,
2. To your software it 'looks like' a standard serial port,
3. it works with the various amateur radio communications packages without difficulty.

Figure 1: USB interface circuit. The breakout board sits on top of a small PCB which holds the other components and allows for simple mounting of the device into whatever apparatus it is built into. The pull-up resistor R4 can be installed if required. If an open collector output is not required, the opto-coupler could be replaced by another ISO7421 or one of its sister devices which have more channels.



4. It's cheap and easy to use!

The device in question is produced by a company called *Sparkfun* and I purchased several units from another company called *Proteogear*. See <http://www.proteogear.com.au/breakout-board-for-ft232rl-usb-to-serial.html> The first unit was mounted on a small piece of vero-board and coupled the RTS and DTR lines through a low current opto-coupler to drive the Press-To-Talk line of my transceiver. It worked very well as a virtual COM port with a direct USB connection. At about the same time I was working on a micro-controller project and thought it would be useful to be able to use the breakout board to extract the serial data lines, but galvanic isolation was desirable. While galvanic isolation is not strictly necessary, it does help reduce interference problems and can simplify interfacing the data and control lines to your radio or other equipment. As already shown, isolation of the control lines is straight forward as a simple opto-coupler can be used. However isolation of the serial data lines required additional thought as I wanted to be able to stream serial data as fast as possible through the interface and most opto-couplers cannot run fast enough. A colleague told me about a new range of high-speed isolators, some of which can run as fast as 25 Mbit/second. These devices come in various formats and are produced by *Texas Instruments*, see <http://focus.ti.com/docs/prod/folders/print/iso7421.html> They use dielectric insulation techniques rather than optical coupling, that is, it is basically a capacitor which provides isolation up to 2.5 kV RMS! The clever idea in the design is that the signals follow two paths within the device. Low frequency or DC signals are modulated by a sub-carrier so that they can pass through the isolation capacitor. High frequency signals just pass straight through – it's a very neat solution.

The device I chose was the ISO7421 which has two channels and gives a fully isolated and one Mbit/sec serial data link. On the computer side of the interface, the ISO7421 is powered from the 3.3 volt supply which is available from the USB breakout board. The isolated side is powered by whatever 3.3 or 5 volt supply is available from the equipment to which you connect it. Having decided on a suitable design, a small printed circuit board was produced which holds the breakout board along with the associated interface and isolation components. Figure 1 shows the schematic diagram.

Construction and components

As built, the device uses a mixture of leaded and surface mount components, but there is no reason why a fully SMD unit couldn't be constructed. Figure 2 shows the completed unit, with the breakout board sitting on top of the interface board.

Opto-coupler U1 is a low current device with a high current transfer ratio, but other devices can be used

if available. I obtained the ISO7421 directly from *Texas Instruments* and they are also available from other suppliers. The USB breakout board was purchased from *ProtoGEAR* and their website also has a complete range of technical information and application tutorials for the product.

In Use

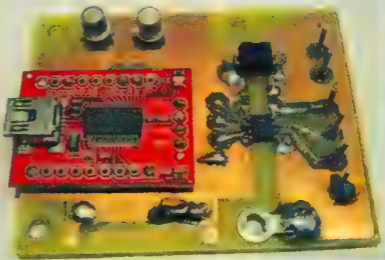
The device has been used with software such as *WSPR*, *FLdigi*, *LabVIEW* and various terminal emulators. It has worked perfectly and several units have been built into various devices which can now be connected to the laptop PC by using a standard USB cable.

Conclusion

Using the USB to serial breakout board has simplified using the USB port to control various devices by eliminating a converter cable. Galvanic isolation reduces the interference potential of the computer and this has proven worthwhile in various weak signal applications. A copy of the PCB artwork in *EAGLE* Cad format can be provided to interested readers.



Figure 2: Breakout board mounted on interface PCB. The isolation between the two sides of the circuit is clearly shown by the gaps between the ground planes on the PCB. If required, a slot could be cut between the sections to further increase the creepage distance.



Hamads



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Copies of Australian CQ magazine. See photo at top next column.

The WIA Archive is seeking early copies of the late 1920s Australian CQ for copying and/or adding to

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FOR SALE - ACT

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James VK2XFC, phone 02 6299 2993.

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WIA Archive's shelves.

Little is known about this magazine. The WIA holds two copies only. Volume 1, Number 1 and Volume 2, Number 2. They contain about 36 pages and issues included articles of general radio interest in addition to the odd experimental article.

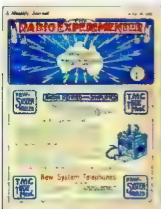
The magazine was published in Melbourne commencing in February 1925 and claimed a circulation of 25000!

For those who have responded to previous requests for copies of early magazines, thank you. We are gradually building up our collection of important Australian magazines which will be available to future researchers.

Please contact Peter VK3RV via email vk3rv@wia.org.au or c/o the National Office in Bayswater if you can help us locate copies of this magazine.

the WIA Archive's shelves.

This magazine was published by the NSW Division of The Australian Radio Transmitters League, a group which was initially formed in 1927 in Queensland and grew quite large in NSW. Later it established itself to some extent in most Australian States. The magazine possibly ceased publication in late 1929 when ARTL members in NSW re-united with the WIA. The WIA Archive holds only one complete copy and one part copy of this magazine. In addition, a small number of copies are held by ARNSW and the Kurrajong Radio Museum. Collectively, we wish to build up the issues extant. The format was fourteen printed pages stapled; each page approximately 150 mm wide x 220 mm height. A coloured cover was included although the colour seems to have changed with each year of publication.



H.K. Love and Ross Hull were responsible for their production, initially from Melbourne, but moved to Sydney in October 1925.

The archive has only eight copies of these magazines at present and as the cover proclaims, they were the official organ of the Wireless Institute of Australia. Issues included detailed reports about individual amateurs in each state and also Institute activities, consequently we are keen to increase our collection. To those who have responded to previous

requests for copies of early magazines, thank you. We are gradually building up our collection of important Australian magazines which will be available to future researchers.

Please contact Peter VK3RV via email vk3rv@wia.org.au or c/o the National Office in Bayswater if you can help us locate copies of the above magazines.



WANTED – NATIONAL

The WIA Archive continues to seek copies of early Australian radio magazines containing aspects of our history and in particular those which were associated with the Institute.

Radio Experimenter, Experimental Radio & Broadcast News and Radio Broadcast were monthly magazines produced during the mid 1920s.



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